1.7.4. In case of mechanical/electrical failure of actuated valve/damper:

- 1.7.4.1. Identify cause of actuation failure.
- 1.7.4.2. Service/replace electrical and/or pneumatic components, as needed.
- 1.7.4.3. Service/replace actuator and/or valve components, as needed.

1.7.5. In case of physical/electrical failure of control system component:

- 1.7.5.1. Identify faulty control system component.
- 1.7.5.2 Service/replace control system components, as needed.

1.8. Excessive Air In-leakage in Air Pollution Control System

1.8.1 In case of holes due to corrosion:

- 1.8.1.1. Identify location of hole.
- 1.8.1.2. Repair system as needed.

1.8.2 In case of open ports, manways, access ports, etc.

- 1.8.2.1. Identify location of open port, manway, etc.
- 1.8.2.2. Replace cover on open port, manway, etc.

2.0 PRIMARY COMBUSTION CHAMBER

2.1. Loss of Natural Gas Pressure/Flow to PCC Main Burner

2.1.1. In case of plugging/physical failure of line or line component:

- 2.1.1.1. Identify the location of plugging or line failure.
- 2.1.1.2. Clear line plugging and/or service/replace faulty line components, as needed.

2.1.2. In case of mechanical/electrical failure of actuated valve:

- 2.1.2.1. Identify cause of actuation failure.
- 2.1.2.2. Service/replace electrical and/or pneumatic components, as needed.
- 2.1.2.3. Service/replace actuator and/or valve components, as needed.

2.1.3. In case of physical/electrical failure of control system component:

- 2.1.3.1. Identify faulty control system component.
- 2.1.3.2. Service/replace control system components, as needed.

2.1.4. In case of mechanical/electrical failure at natural gas supply source:

- 2.1.4.1. Identify the cause of the failure.
- 2.1.4.2. Take the necessary actions to restore the supply of natural gas.

2.2. Loss of Combustion Air Pressure/Flow to PCC

2.2.1. In case of mechanical/electrical failure of combustion air blower:

- 2.2.1.1. Diagnose blower/drive failure.
- 2.2.1.2. Service/replace the blower/drive, as needed.
- 2.2.1.3. Restore electrical power supply to the blower.

2.2.2. In case of physical failure of combustion air duct:

- 2.2.2.1. Identify the location of duct failure.
- 2.2.2.2. Service/replace faulty duct, as needed.

2.2.3. In case of mechanical/electrical failure of actuated valve:

- 2.2.3.1. Identify cause of actuation failure.
- 2.2.3.2. Service/replace electrical and/or pneumatic components, as needed.
- 2.2.3.3. Service/replace actuator and/or valve components, as needed.

2.2.4. In case of physical/electrical failure of control system component:

2.2.4.1. Identify faulty control system component.

2.2.4.2. Service/replace control system components, as needed.

2.3. PCC Main Burner Pilot Failure

2.3.1. For loss of natural gas pressure/flow, see 2.1.

2.3.2. For loss of combustion air pressure/flow, see 2.2.

2.3.3. In case of physical/electrical failure of igniter:

2.3.3.1. Identify cause of igniter failure.

2.3.3.2. Service/replace igniter and/or associated components, as needed.

2.3.4. In case of physical/electrical failure of control system component:

2.3.4.1. Identify faulty control system component.

2.3.4.2. Service/replace control system components, as needed.

2.4. Loss of Waste Flow to PCC Injector

2.4.1. In case of mechanical/electrical failure of waste feed pump:

2.4.1.1. Diagnose pump/drive failure.

2.4.1.2. Service/replace the pump/drive, as needed.

2.4.1.3. Restore electrical power supply to the pump.

2.4.2. In case of low nitrogen pressure, see 1.4.

2.4.3. In case of plugging/physical failure of line or line component:

2.4.3.1. Identify the location of plugging or line failure.

2.4.3.2. Clear line plugging and/or service/replace faulty line components, as needed.

2.4.3.3. Restore/confirm functional heat tracing, if applicable.

2.4.4. In case of mechanical/electrical failure of actuated valve:

2.4.4.1. Identify cause of actuation failure.

2.4.4.2. Service/replace electrical and/or pneumatic components, as needed.

2.4.4.3. Service/replace actuator and/or valve components, as needed.

2.4.5. In case of physical/electrical failure of control system component:

2.4.5.1. Identify faulty control system component.

2.4.5.2. Service/replace control system components, as needed.

2.5. Loss of Waste Feedrate Control to PCC Injector

2.5.1. In case of loss of waste pressure/flow to PCC injector, see 2.4.

2.5.2. In case of physical/electrical failure of flow transmitter: Service/replace flow transmitter and/or associated instrumentation, as needed.

2.5.3. In case of actuated valve failure:

2.5.3.1. Identify cause of actuation failure.

2.5.3.2. Service/replace electrical and/or pneumatic components, as needed.

2.5.3.3. Service/replace actuator and/or valve components, as needed.

2.5.4. In case of physical/electrical failure of control system component:

2.5.4.1. Identify faulty control system component.

2.5.4.2. Service/replace control system components, as needed.

2.6. Loss of Atomization Air Pressure to a PCC Injector

2.6.1. For a total loss of plant/instrument air supply, see 1.3.

2.6.2. In case of plugging/physical failure of line or line component:

2.6.2.1. Identify the location of plugging or line failure.

2.6.2.2. Clear line plugging and/or service/replace faulty line components, as needed.

2.6.3. In case of mechanical/physical failure of pressure control valve: Service/replace pressure control valve, as needed.

2.7. Loss of PCC Draft Control (Unit 4)

2.7.1. In case of ID fan failure, see 9.5

2.7.2. In case of physical/electrical failure of kiln pressure transmitter: Service/replace pressure transmitter and/or associated instrumentation, as needed.

2.7.3. In case of actuated damper failure:

2.7.3.1. Identify cause of actuation failure.

2.7.3.2. Service/replace electrical and/or pneumatic components, as needed.

2.7.3.3. Service/replace actuator and/or damper components, as needed.

2.7.4. In case of physical/electrical failure of control system component:

2.7.4.1. Identify faulty control system component.

2.7.4.2. Service/replace control system components, as needed.

2.8. Loss of PCC Temperature Control

2.8.1. In case of loss of natural gas pressure/flow to main burner, see 2.1.

2.8.2. In case of loss of waste pressure/flow to PCC injector, see 2.4.

2.8.3. In case of physical/electrical failure of temperature element:

2.8.3.1. Service/replace faulty temperature element and/or associated instrumentation, as needed.

2.8.4. In case of physical/electrical failure of control system component:

2.8.4.1. Identify faulty control system component.

2.8.4.2. Service/replace control system components, as needed.

2.9. Flame Failure

2.9.1. In case of physical/electrical failure of flame detector:

2.9.1.1. Identify faulty flame detector component.

2.9.1.2. Service/replace flame detector components, as needed.

2.9.2. In case of physical/electrical failure of control system component:

2.9.2.1. Identify faulty control system component.

2.9.2.2. Service/replace control system components, as needed.

2.10. Kiln Rotation Malfunction (Unit 4)

2.10.1. In case of mechanical/electrical kiln drive system:

2.10.1.1. Diagnose drive failure.

2.10.1.2. Service/replace the drive, as needed.

2.10.1.3. Restore electrical power supply to motor.

2.10.2. In case of physical/electrical failure of kiln rotational speed transmitter: Service/replace transmitter and/or associated instrumentation, as needed.

2.10.3. In case of physical/electrical failure of control system component:

2.10.3.1. Identify faulty control system component.

2.10.3.2. Service/replace control system components, as needed.

2.11. Bulk/Charge Feed Door Malfunction

2.11.1. In case of mechanical/electrical failure of actuated door:

2.11.1.1. Identify cause of actuation failure.

2.11.1.2. Service/replace electrical, hydraulic, and/or pneumatic components, as needed.

2.11.1.3. Service/replace actuator and/or valve components, as needed.

2.11.2. In case of physical/electrical failure of control system component:

2.11.2.1. Identify faulty control system component.

2.11.2.2. Service/replace control system components, as needed.

2.12. Physical/Mechanical Internal Equipment Failure

2.12.1. In case of refractory failure, repair/replace refractory

2.12.2. In case of ash collection failure

2.12.2.1. Diagnose ash collection system failure

2.12.2.2. Service/replace ash collection system components, as needed.

2.13. PCC Seal Visual Emissions Monitoring and Recording System

2.13.1. In case of physical/electrical failure of camera, service/replace camera.

2.13.2. In case of physical/electrical failure of monitor, service/replace monitor.

2.13.3. In case of physical/electrical failure of recording system, service/replace recording system.

2.14. Rapid Steam Generation from Ash Collection System Water

2.14.1. In case of refractory failure, repair/replace refractory.

2.14.2. In case of uncontrolled movement/dropping of residue into ash collection system water, inspect system to identify/remove other suspect material.

3.0 SECONDARY COMBUSTION CHAMBER

3.1. Loss of Natural Gas Pressure/Flow to SCC Main Burner

3.1.1. In case of plugging/physical failure of line or line component:

3.1.1.1. Identify the location of plugging or line failure.

3.1.1.2. Clear line plugging and/or service/replace faulty line components, as needed.

3.1.2. In case of mechanical/electrical failure of actuated valve:

3.1.2.1. Identify cause of actuation failure.

3.1.2.2. Service/replace electrical and/or pneumatic components, as needed.

3.1.2.3. Service/replace actuator and/or valve components, as needed.

3.1.3. In case of physical/electrical failure of control system component:

3.1.3.1. Identify faulty control system component.

3.1.3.2. Service/replace control system components, as needed.

3.1.4. In case of mechanical/electrical failure at natural gas supply source:

3.1.4.1. Identify the cause of the failure.

3.1.4.2. Take the necessary actions to restore the supply of natural gas.

3.2. Loss of Combustion Air Pressure/Flow to SCC

3.2.1. In case of mechanical/electrical failure of combustion air blower:

3.2.1.1. Diagnose blower/drive failure.

3.2.1.2. Service/replace the blower/drive, as needed.

3.2.1.3. Restore electrical power supply to the blower.

3.2.2. In case of physical failure combustion air duct:

3.2.2.1. Identify the location of duct failure.

3.2.2.2. Service/replace faulty duct, as needed.

3.2.3. In case of mechanical/electrical failure of actuated valve:

3.2.3.1. Identify cause of actuation failure.

3.2.3.2. Service/replace electrical and/or pneumatic components, as needed.

3.2.3.3. Service/replace actuator and/or valve components, as needed.

3.2.4. In case of physical/electrical failure of control system component:

3.2.4.1. Identify faulty control system component.

3.2.4.2. Service/replace control system components, as needed.

3.3. SCC Main Burner Ignition Failure

3.3.1. For loss of natural gas pressure/flow, see 3.1.

3.3.2. For loss of combustion air pressure/flow, see 3.2.

3.3.3. In case of physical/electrical failure of igniter:

3.3.3.1. Identify cause of igniter failure.

3.3.3.2. Service/replace igniter and/or associated components, as needed.

3.3.4. In case of physical/electrical failure of control system component:

3.3.4.1. Identify faulty control system component.

3.3.4.2. Service/replace control system components, as needed.

3.4. Loss of Waste Flow to SCC Injector (Unit 4)

3.4.1. In case of mechanical/electrical failure of waste feed pump:

3.4.1.1. Diagnose pump/drive failure.

3.4.1.2. Service/replace the pump/drive, as needed.

3.4.1.3. Restore electrical power supply to the pump.

3.4.2. In case of low nitrogen pressure, see 1.4.

3.4.3. In case of plugging/physical failure of line or line component:

3.4.3.1. Identify the location of plugging or line failure.

3.4.3.2. Clear line plugging and/or service/replace faulty line components, as needed.

3.4.3.3. Restore/confirm functional heat tracing, if applicable.

3.4.4. In case of mechanical/electrical failure of actuated valve:

3.4.4.1. Identify cause of actuation failure.

3.4.4.2. Service/replace electrical and/or pneumatic components, as needed.

3.4.4.3. Service/replace actuator and/or valve components, as needed.

3.4.5. In case of physical/electrical failure of control system component:

3.4.5.1. Identify faulty control system component.

3.4.5.2. Service/replace control system components, as needed.

3.5. Loss of Waste Feedrate Control to SCC Injector (Unit 4)

3.5.1. In case of loss of waste pressure/flow to SCC injector, see 3.4.

3.5.2. In case of physical/electrical failure of flow transmitter: Service/replace flow transmitter and/or associated instrumentation, as needed.

3.5.3. In case of actuated valve failure:

3.5.3.1. Identify cause of actuation failure.

3.5.3.2. Service/replace electrical and/or pneumatic components, as needed.

3.5.3.3. Service/replace actuator and/or valve components, as needed.

3.5.4. In case of physical/electrical failure of control system component:

3.5.4.1. Identify faulty control system component.

3.5.4.2. Service/replace control system components, as needed.

3.6. Loss of Atomization Air Pressure to a SCC Injector

3.6.1. For a total loss of plant/instrument air supply, see 1.3.

3.6.2. In case of plugging/physical failure of line or line component:

3.6.2.1. Identify the location of plugging or line failure.

3.6.2.2. Clear line plugging and/or service/replace faulty line components, as needed.

3.6.3. In case of mechanical/physical failure of pressure control valve: Service/replace pressure control valve, as needed.

3.7. Loss of SCC Temperature Control

3.7.1. In case of loss of natural gas pressure/flow to main burner, see 3.1.

3.7.2. In case of loss of waste pressure/flow to SCC injector, see 3.4.

3.7.3. In case of physical/electrical failure of temperature element:

3.7.3.1. Service/replace faulty temperature element and/or associated instrumentation, as needed.

3.7.4. In case of physical/electrical failure of control system component:

3.7.4.1. Identify faulty control system component.

3.7.4.2. Service/replace control system components, as needed.

3.8. Flame Failure

3.8.1. In case of physical/electrical failure of flame detector:

3.8.1.1. Identify faulty flame detector component.

3.8.1.2. Service/replace flame detector components, as needed.

3.8.2. In case of physical/electrical failure of control system component:

3.8.2.1. Identify faulty control system component.

3.8.2.2. Service/replace control system components, as needed.

3.9. Physical/Mechanical Internal Equipment Failure

3.9.1. In case of refractory failure, repair/replace refractory.

3.10. Low Water Level in Slag Collection System (Unit 4)

3.10.1. For a loss of process water pressure/flow, see 1.6.

3.10.2. In case of physical/mechanical failure of level controller: Service/replace faulty level controller and/or associated components, as needed.

3.10.3. In case of physical/mechanical failure of actuated valve:

3.10.3.1. Identify cause of actuation failure.

3.10.3.2. Service/replace pneumatic components, as needed.

3.10.3.3. Service/replace actuator and/or valve components, as needed.

3.11. Emergency Safety Vent Opening

3.11.1. Respond to an emergency safety vent opening in a manner consistent with the *Emergency Safety Vent Plan.*

3.11.2. In case of mechanical failure of the actuator:

3.11.2.1. Identify cause of actuation failure.

3.11.2.2. Service/replace emergency safety vent components, as needed.

3.12. Rapid Steam Generation from Ash Collection System Water

2.14.1. In case of refractory failure, repair/replace refractory.

2.14.2. In case of uncontrolled movement/dropping of residue into ash collection system water, inspect system to identify/remove other suspect material.

4.0 TEMPERING CHAMBER (UNIT 4)

4.1. Loss of Tempering Chamber Exit Gas Temperature Control

4.1.1. For a loss of process water pressure/flow, see 1.6.

4.1.2. In case of physical/electrical failure of flow transmitter: Service/replace flow transmitter and/or associated instrumentation, as needed.

4.1.3. In case of actuated valve failure:

4.1.3.1. Identify cause of actuation failure.

4.1.3.2. Service/replace electrical and/or pneumatic components, as needed.

4.1.3.3. Service/replace actuator and/or valve components, as needed.

4.1.4. In case of physical/electrical failure of control system component:

4.1.4.1. Identify faulty control system component.

4.1.4.2. Service/replace control system components, as needed.

4.1.5. In case of nozzle failure, service/replace nozzle, as needed.

4.2. Loss of Atomization Air Pressure to Nozzle

4.2.1. For a total loss of plant/instrument air supply, see 1.3.

4.2.2. In case of plugging/physical failure of line or line component:

4.2.2.1. Identify the location of plugging or line failure.

4.2.2.2. Clear line plugging and/or service/replace faulty line components, as needed.

5.0 LIME SLURRY SYSTEM

5.1. Loss of Lime Feed to Lime Slurry Feed Tank

5.1.1. In case of mechanical/electrical failure of lime slurry screw feeder:

- 5.1.1.1. Diagnose feeder/drive failure.
- 5.1.1.2. Service/replace the feeder/drive, as needed.
- 5.1.1.3. Restore electrical power supply to the lime slurry screw feeder.

5.1.2. In case of mechanical/electrical failure of lime bin activator/vibrator:

- 5.1.2.1. Diagnose lime bin activator/vibrator failure.
- 5.1.2.2. Service/replace the lime bin activator/vibrator, as needed.
- 5.1.2.3. Restore electrical power supply to the lime slurry screw feeder.

5.1.3. In case of plugging/physical failure of line or line component:

- 5.1.3.1. Identify the location of plugging or line failure.
- 5.1.3.2. Clear line plugging and/or service/replace faulty line components, as needed.

5.1.4. In case of physical/electrical failure of lime feed controls: Service/replace faulty instrumentation and/or control system components, as needed.

5.2. Malfunction in Lime Slurry Concentration

5.2.1. In case of loss of lime feed to lime slurry feed tank, see 5.1

5.2.2. In case of loss of water flow to lime slurry feed tank, see 1.5

5.2.3. In case of mechanical/electrical failure of lime slurry agitator:

- 5.2.3.1. Diagnose agitator/drive failure.
- 5.2.3.2. Service/replace the agitator/drive, as needed.
- 5.2.3.3. Restore electrical power supply to the lime slurry agitator.

5.2.4. In case of physical/electrical failure of instrumentation: Service/replace faulty instrumentation, as needed.

5.2.5. In case of physical/electrical failure of control system component:

- 5.2.5.1. Identify faulty control system component.
- 5.2.5.2. Service/replace control system components, as needed.

6.0 UNITS 2 AND 3 SPRAY DRYER ABSORBER (SDA)

6.1. Loss of Lime Slurry Flow to SDA

6.1.1. In case of mechanical/electrical failure of lime slurry feed pump:
- 6.1.1.1. Diagnose pump/drive failure.
- 6.1.1.2. Service/replace the pump/drive, as needed.
- 6.1.1.3. Restore electrical power supply to the pump.

6.1.2. In case of plugging/physical failure of line or line component:
- 6.1.2.1. Identify the location of plugging or line failure.
- 6.1.2.2. Clear line plugging and/or service/replace faulty line components, as needed.
- 6.1.2.3. Restore/confirm functional heat tracing, if applicable.

6.1.3. In case of mechanical/electrical failure of actuated valve:
- 6.1.3.1. Identify cause of actuation failure.
- 6.1.3.2. Service/replace electrical and/or pneumatic components, as needed.
- 6.1.3.3. Service/replace actuator and/or valve components, as needed.

6.1.4. In case of physical/electrical failure of control system component:
- 6.1.4.1. Identify faulty control system component.
- 6.1.4.2. Service/replace control system components, as needed.

6.2. Loss of Lime Slurry Flow Control

6.2.1. In case of loss of slurry flow to SDA, see 6.1.

6.2.2. In case of physical/electrical failure of flow transmitter: Service/replace flow transmitter and/or associated instrumentation, as needed.

6.2.3. In case of actuated valve failure:
- 6.2.3.1. Identify cause of actuation failure.
- 6.2.3.2. Service/replace electrical and/or pneumatic components, as needed.
- 6.2.3.3. Service/replace actuator and/or valve components, as needed.

6.2.4. In case of physical/electrical failure of control system component:
- 6.2.4.1. Identify faulty control system component.
- 6.2.4.2. Service/replace control system components, as needed.

6.3. Loss of City Water Flow to SDA (Unit 2 and 3)

6.3.1. In case of total loss of city water supply, see 1.5.

6.3.2. In case of plugging/physical failure of line or line component:

6.3.2.1. Identify the location of plugging or line failure.

6.3.2.2. Clear line plugging and/or service/replace faulty line components, as needed.

6.3.3. In case of mechanical/electrical failure of actuated valve:

6.3.3.1. Identify cause of actuation failure.

6.3.3.2. Service/replace electrical and/or pneumatic components, as needed.

6.3.3.3. Service/replace actuator and/or valve components, as needed.

6.4. Loss of Cooling Air Flow to Atomizer

6.4.1. In case of mechanical/electrical failure of atomizer cooling air blower:

6.4.1.1. Diagnose blower/drive failure.

6.4.1.2. Service/replace the blower/drive, as needed.

6.4.1.3. Restore electrical power supply to the blower.

6.4.2. In case of physical failure of atomizer cooling air duct:

6.4.2.1. Identify the location of duct failure.

6.4.2.2. Service/replace faulty duct, as needed.

6.4.3. In case of physical/electrical failure of control system component:

6.4.3.1. Identify faulty control system component.

6.4.3.2. Service/replace control system components, as needed.

6.5. Loss of SDA Exit Gas Temperature Control

6.5.1. In case of loss of city water flow to SDA, see 6.3.

6.5.2. In case of physical/electrical failure of temperature transmitter: Service/replace temperature transmitter and/or associated instrumentation, as needed.

6.5.3. In case of actuated valve failure:

6.5.3.1. Identify cause of actuation failure.

6.5.3.2. Service/replace electrical and/or pneumatic components, as needed.

6.5.3.3. Service/replace actuator and/or valve components, as needed.

6.5.4. In case of physical/electrical failure of control system component:

6.5.4.1. Identify faulty control system component.

6.5.4.2. Service/replace control system components, as needed.

6.6. Atomizer Failure

6.6.1. In case of low atomizer lubrication oil flow:

6.6.1.1. Diagnose the failure in the lubrication system

6.6.1.2. Service/replace components of the lubrication system, as needed.

6.6.2. In case of mechanical/electrical failure of atomizer:

6.6.2.1. Diagnose atomizer/drive failure.

6.6.2.2. Service/replace the atomizer/drive, as needed.

6.6.2.3. Restore electrical power supply to the atomizer.

6.6.2.4. components, as needed.

7.0 UNIT 4 SPRAY DRYER ABSORBER (SDA)

7.1. Loss of Lime Slurry Flow to SDA

7.1.1. In case of mechanical/electrical failure of lime slurry feed pump:

7.1.1.1. Diagnose pump/drive failure.

7.1.1.2. Service/replace the pump/drive, as needed.

7.1.1.3. Restore electrical power supply to the pump.

7.1.2. In case of plugging/physical failure of line or line component:

7.1.2.1. Identify the location of plugging or line failure.

7.1.2.2. Clear line plugging and/or service/replace faulty line components, as needed.

7.1.2.3. Restore/confirm functional heat tracing, if applicable.

7.1.3. In case of mechanical/electrical failure of actuated valve:

7.1.3.1. Identify cause of actuation failure.

7.1.3.2. Service/replace electrical and/or pneumatic components, as needed.

7.1.3.3. Service/replace actuator and/or valve components, as needed.

7.1.4. In case of physical/electrical failure of control system component:

7.1.4.1. Identify faulty control system component.

7.1.4.2. Service/replace control system components, as needed.

7.2. Loss of Lime Slurry Flow Control/Exit Gas Temperature Control

7.2.1. In case of loss of slurry flow to SDA, see 7.1.

7.2.2. In case of physical/electrical failure of flow transmitter: Service/replace flow transmitter and/or associated instrumentation, as needed.

7.2.3. In case of actuated valve failure:

7.2.3.1. Identify cause of actuation failure.

7.2.3.2. Service/replace electrical and/or pneumatic components, as needed.

7.2.3.3. Service/replace actuator and/or valve components, as needed.

7.2.4. In case of physical/electrical failure of control system component:

7.2.4.1. Identify faulty control system component.

7.2.4.2. Service/replace control system components, as needed.

7.3. Loss of Atomization Air Pressure to SDA Nozzle

7.3.1. For a total loss of plant/instrument air supply, see 1.3.

7.3.2. In case of plugging/physical failure of line or line component:

7.3.2.1. Identify the location of plugging or line failure.

7.3.2.2. Clear line plugging and/or service/replace faulty line components, as needed.

8.0 CARBON INJECTION SYSTEM (UNIT 4)

8.1. Loss of Carrier Gas Pressure

8.1.1. In case of mechanical/electrical failure of carbon injection air blower:

8.1.1.1. Diagnose blower/drive failure.

8.1.1.2. Service/replace the blower/drive, as needed.

8.1.1.3. Restore electrical power supply to the blower.

8.1.2. In case of physical failure air duct:

8.1.2.1. Identify the location of duct failure.

8.1.2.2. Service/replace faulty duct, as needed.

8.1.3. In case of physical/electrical failure of control system component:

8.1.3.1. Identify faulty control system component.

8.1.3.2. Service/replace control system components, as needed.

8.2. Loss/Restriction of Activated Carbon Flow

8.2.1. In case of loss of plant air to carbon bulk sack, see 8.3

8.2.2. In case of mechanical/electrical failure of carbon feeder:

8.2.2.1. Diagnose feeder/drive failure.

8.2.2.2. Service/replace the feeder/drive, as needed.

8.2.2.3. Restore electrical power supply to the carbon feeder.

8.2.3. In case of plugging/physical failure of line or line component:

8.2.3.1. Identify the location of plugging or line failure.

8.2.3.2. Clear line plugging and/or service/replace faulty line components, as needed.

8.2.3.3. Restore/confirm functional heat tracing, if applicable.

8.3. Loss of Plant Air Pressure/Flow to Carbon Bulk Sack

8.3.1. For a total loss of plant/instrument air supply, see 1.3.

8.3:2. In case of plugging/physical failure of line or line component:

8.3.2.1. Identify the location of plugging or line failure.

8.3.2.2. Clear line plugging and/or service/replace faulty line components, as needed.

8.3.3. In case of mechanical/electrical failure of actuated valve:

8.3.3.1. Identify cause of actuation failure.

8.3.3.2. Service/replace electrical and/or pneumatic components, as needed.

8.3.3.3. Service/replace actuator and/or valve components, as needed.

8.3.4. In case of physical/electrical failure of control system component:

8.3.4.1. Identify faulty control system component.

8.3.4.2. Service/replace control system components, as needed.

9.0 BAGHOUSE & INDUCED DRAFT (ID) FAN

9.1. Torn/Leaking Bag

9.1.1. In case of a baghouse leak detection alarm, follow the relevant corrective measures prescribed in the Operation and Maintenance Plan.

9.1.2. In case of a baghouse leak detection system failure:

9.1.2.1. Service/replace torn/leaking bag(s), as needed.

9.1.2.2. Diagnose the failure of the baghouse detection system.

9.1.2.3. Service/replace baghouse leak detection system, as needed.

9.2. Bag Blinding/High-High Pressure Drop

9.2.1. In case of low baghouse inlet gas temperature:

9.2.1.1. Follow the appropriate corrective actions prescribed by paragraph 6.5 (Unit 2 and 3)

9.2.1.2. Follow the appropriate corrective actions prescribed by paragraph 7.2 (Unit 4)

9.2.1.3. Perform baghouse inspection.

9.2.1.4. Service/replace bag(s), as needed.

9.3. Loss of Stack Gas Flowrate Control (Unit 2 and 3)

9.3.1. In case of ID fan failure, see 9.5

9.3.2. In case of physical/electrical failure of flow transmitter: Service/replace flow transmitter and/or associated instrumentation, as needed.

9.3.3. In case of actuated damper failure:

9.3.3.1. Identify cause of actuation failure.

9.3.3.2. Service/replace electrical and/or pneumatic components, as needed.

9.3.3.3. Service/replace actuator and/or damper components, as needed.

9.3.4. In case of physical/electrical failure of control system component:

9.3.4.1. Identify faulty control system component.

9.3.4.2. Service/replace control system components, as needed.

9.4. Baghouse Isolation Damper Malfunction (Unit 4)

9.4.1. In case of actuated damper failure:

9.4.1.1. Identify cause of actuation failure.

9.4.1.2. Service/replace electrical and/or pneumatic components, as needed.

9.4.1.3. Service/replace actuator and/or damper components, as needed.

9.4.2. In case of physical/electrical failure of control system component:

9.4.2.1. Identify faulty control system component.

9.4.2.2. Service/replace control system components, as needed.

9.5. ID Fan Failure

9.5.1. In case of mechanical/electrical failure of ID fan:

9.5.1.1. Diagnose fan/drive failure.

9.5.1.2. Service/replace the fan/drive, as needed.

9.5.1.3. Restore electrical power supply to the ID fan.

10.0 CONTROL SYSTEM/CONTINUOUS MONITORING SYSTEM

10.1. Control System/Continuous Monitoring System Malfunction

10.1.1. As needed, refer to the *CMS QA/QC Plan* for guidance and to ensure that proper calibrations are performed.

10.1.2. In case of physical/electrical failure of instrumentation:

10.1.2.1. Identify faulty instrumentation component.

10.1.2.2. Service/replace faulty instrumentation components, as needed.

10.1.3. In case of physical/electrical failure of control system component:

10.1.3.1. Identify faulty control system component.

10.1.3.2. Service/replace control system components, as needed.

10.1.4. In case of physical/electrical failure of data acquisition/availability:

10.1.4.1. Identify faulty data system components.

10.1.4.2. Service/replace data system components, as needed.

10.2. Continuous Emissions Monitoring System Malfunction

10.2.1. As needed, refer to the *CEMS QA/QC Plan* for guidance and to ensure that proper calibrations are performed and that the appropriate performance specifications are met.

10.2.2. In case of physical/electrical failure umbilical heat tracing:

10.2.2.1. Diagnose failure of heat tracing.

10.2.2.2. Replace/restore heat traced sample umbilical.

10.2.3. In case of mechanical/electrical failure of heated vacuum pump:

10.2.3.1. Diagnose pump/drive failure.

10.2.3.2. Service/replace the pump/drive, as needed.

10.2.3.3. Replace/restore pump head heat source.

10.2.3.4. Restore electrical power supply to heated vacuum pump.

10.2.4. In case of plugging/physical failure of sample probe/umbilical:

10.2.4.1. Identify the location of failure.

10.2.4.2. Clear plugging and/or service/replace faulty components, as needed.

10.2.5. In case of mechanical/electrical failure of actuated valve:

10.2.5.1. Identify cause of actuation failure.

10.2.5.2. Service/replace electrical and/or pneumatic components, as needed.

10.2.5.3. Service/replace actuator and/or valve components, as needed.

10.2.6. In case of mechanical/electrical failure of analyzer:

10.2.6.1. Refer to manufacturer's service manual for guidance on troubleshooting and servicing analyzer.

10.2.6.2. Service/replace analyzer, as needed.

10.2.7. In case of mechanical/electrical failure of associated instrumentation:

10.2.7.1. Identify faulty instrumentation component.

10.2.7.2. Service/replace faulty instrumentation components, as needed.

10.2.8. In case of physical/electrical failure of control system component:

10.2.8.1. Identify faulty control system component.

10.2.8.2. Service/replace control system components, as needed.

EMERGENCY SAFETY VENT PLAN

Prepared for:

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Sauget, Illinois

Prepared by:

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Franklin, Tennessee

October 2008

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1.0 INTRODUCTION AND BACKGROUND

Veolia ES Technical Solutions, LLC (Veolia) owns and operates two fixed hearth incinerators (Units 2 and 3) and a rotary kiln incinerator (Unit 4) at its facility located in Sauget, Illinois. These incinerators are subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Hazardous Waste Combustors (HWCs), Code of Federal Regulations (CFR), Part 63, Subpart EEE (§§ 63.1200 to 63.1221). The NESHAP for HWCs specifies emissions standards which reflect emissions performance of maximum achievable control technologies (MACT), and is commonly referred to as the HWC MACT.

Hazardous Waste Combustors are required to have an Emergency Safety Vent Plan and to keep the plan in the operating record. The *Emergency Safety Vent Plan* must follow the requirements described in § 63.1206(c)(4). This *Emergency Safety Vent Plan* demonstrates Veolia's compliance with these requirements. This plan includes information about the facility as it relates to the Emergency Safety Vent (ESV) systems, and procedures that will be followed during an ESV event. Table 1-1 presents the regulatory references related to the required ESV program and the section of this plan that addresses each specific requirement.

Due to the general applicability of the ESV requirement and the similarity of the incinerator systems, general references to an ESV or incinerator system in this document will imply all three systems. Information that is only applicable to one or two of the three systems will be clearly identified.

1.1 Summary of Facility Information

Brief summaries which describe the fixed hearth incinerators and the rotary kiln incinerator are presented in this section.

1.1.1 Fixed Hearth Incinerators

Each of the fixed hearth incinerators includes the following components:

- Feed equipment
- Primary and secondary combustion chambers
- Lime injection system
- Spray dryer absorber (SDA)
- Fabric filter baghouse

Table 1-1
Regulatory Requirements for Emergency Safety Vent Operating Plan and Corresponding Section that Addresses the Requirement

Regulatory Citation	Description	Plan Section
63.1206(c)(4)(i)	Documentation in operating record of an ESV opening while hazardous waste remains in the combustion chamber: (1) Record if ESV by-passed APCS (2) Determine if operation remained in compliance considering the emissions during the ESV	Section 2.2
63.1206(c)(4)(ii)(B)	Information documenting effectiveness of plan's procedures to maintain combustion chamber temperature and pressure, as is reasonably feasible	Section 3.5
63.1206(c)(4)(ii)(B)	Detailed procedures for rapidly stopping waste feed	Section 3.1
63.1206(c)(4)(ii)(B)	Detailed procedures for shutting down the combustor	Section 3.4
63.1206(c)(4)(ii)(B)	Detailed procedures for maintaining temperature in combustion chamber	Section 3.2
63.1206(c)(4)(ii)(B)	Detailed procedures for maintaining negative pressure in the combustion chamber	Section 3.3
63.1206(c)(4)(iii)	Investigation of ESV openings	Section 2.1
63.1206(c)(4)(iii)	Recording of ESV openings	Section 2.2
63.1206(c)(4)(iv)	Reporting of ESV openings	Section 2.3

- Solids and ash removal systems
- Induced draft (ID) fan and stack
- Instrumentation, controls, and data acquisition systems

Various solid and liquid wastes and gaseous feedstreams are thermally treated in the fixed hearth incinerators. Solid waste is fed to the primary (lower) combustion chamber via a feed conveyor system and pneumatic ram. Liquid waste from tanks and tanker trucks are fed to the primary combustion chamber through two atomized liquid injectors. Liquid waste from containers are fed to the primary combustion chamber through a specialty feed injector. A gaseous feedstream is fed to the Unit 2 primary combustion chamber directly from gas cylinders. Off gases from a hooded feed emission control system and from a waste handling glove box are fed directly to the Unit 3 secondary combustion chamber. Combustion chamber temperatures are maintained using natural gas fired to a dedicated burner in both the primary and secondary chambers.

Combustion gas exits the secondary combustion chamber and enters the SDA, which provides acid gas removal and cooling of the combustion gas. Combustion gas exits the SDA and is distributed to the fabric filter baghouses, which provide particulate matter removal. The induced draft fan, located downstream of the baghouses, moves the combustion gas through the system and exhausts the gas through the main stack.

1.1.2 Rotary Kiln Incinerator

The rotary kiln incinerator includes the following components:

- Waste feed system
- Primary and secondary combustion chambers
- Tempering chamber
- Lime injection system
- Spray dryer absorber
- Carbon injection system
- Fabric filter baghouse
- Solids and ash removal systems
- ID fan and stack
- Instrumentation, controls, and data acquisition systems

Various solid and liquid wastes are thermally treated in the rotary kiln incinerator. Solid wastes are fed to a ram feeder via a clamshell, a drum feed conveyor, and an auxiliary feed conveyor. A hydraulic ram pushes the solid waste into the kiln. Liquid waste from tanks and tanker trucks is fed to the primary and secondary combustion chambers through atomized liquid injectors. Combustion chamber temperatures are maintained using natural gas fired to a dedicated burner in both the primary and secondary chambers.

Combustion gas exits the secondary combustion chamber and enters the tempering chamber, which provides cooling of the combustion gases. The combustion gas exits the tempering chamber and is distributed between two identical SDAs, which provide acid gas removal and additional gas cooling. A carbon injection system is utilized for controlling dioxin/furan and mercury emissions. The activated carbon is air injected into the combustion gas immediately downstream of the convergence of combustion gases from the SDAs. From the SDAs, combustion gas is distributed to fabric filter baghouses, which provide particulate matter removal. The ID fan, located downstream of the baghouses, moves the combustion gas through the system and exhausts the gas through the main stack.

1.2 Description of the ESV System

Each incinerator is equipped with an emergency safety vent (ESV) located at the top of the secondary combustion chamber. This ESV is a refractory-lined emergency thermal relief vent (TRV) which is held in the closed position by a pneumatic cylinder. The control valve in the line supplying air to the cylinder and the cylinder vent valve which opens the TRV are located in the control room for each unit. Valve locks (with keys attached) are utilized to deter indiscriminate operation of these valves. Opening of the TRV allows hot combustion gas to vent from the combustion system during emergency shutdown events. The purpose of the TRV is to protect the downstream APCS from excessive temperature situations.

Conditions which may warrant a TRV opening are summarized in Table 2-1. Typically, alarms and/or interlocks will be triggered prior to these conditions being present. Alarms provide the operator the opportunity to take measures in attempt to restore proper operating conditions. Otherwise, a controlled cutoff of the waste feeds, an AWFCO, or an emergency shutdown may occur prior to opening the TRV. If hazardous waste is being fed at the time the TRV is opened, the TRV position transmitter will detect the TRV opening and trigger an AWFCO.

Table 1-2
Thermal Relief Vent Openings

Parameter	Condition [1]
Electrical Supply	Loss of Power
Air Supply	Loss of Air Pressure (TRV will fail open)
ID Fan	Failure/Malfunction
SDA Exit Gas Temperature	> 500 °F
Emergency Shutdown	Operator's Discretion

[1] The operator is permitted to open the TRV if these conditions are present.

Unit 4 is equipped with a second ESV located at the kiln face. This ESV is referred to as the surge vent and is kept closed by a weighted louver. The surge vent will only open if there is a pressure excursion in the kiln sufficient enough to overcome the weighted louver. A deflector separates the escaping combustion gas from the feed, and the surge vent angles to a horizontal opening. This design minimizes the entrainment of solid through the surge vent.

An ESV opening may correspond with a malfunction event. Information regarding operation of the incinerator and the associated control equipment during times of start-up, shutdown and malfunction is provided in the facility *Start-up, Shutdown, Malfunction Plan* (SSMP).

2.0 ESV SYSTEM INVESTIGATION, DOCUMENTATION AND REPORTING

2.1 ESV Investigation

If an ESV opens for any reason during normal operations, the operator is instructed to:

1) Verify that all waste feeds to the incinerator are cutoff,
2) If possible, operate the ID fan, and
3) If possible, maintain normal combustion chamber temperatures on natural gas.

If hazardous waste is in the combustion chamber during a ESV opening, the incinerator supervisor should be notified as soon as possible. The incinerator supervisor will coordinate with technical staff to determine potential causes for the event and to estimate excessive emissions.

2.2 Documentation of ESV Opening

Each instance in which the emergency vent opens will be recorded in the facility operating record. This record will, at a minimum, include the date, time, and the operating mode at the time of the ESV opening. This data is automatically documented in the operating record by the CMS.

If the ESV opens when hazardous waste remains in the combustion chamber (*i.e.*, when the hazardous waste residence time has not expired) during an event other than a malfunction (as defined by the facility SSMP), Veolia personnel will document that an ESV event occurred, determine if the facility remained in compliance with facility emission standards, and record the findings of that determination in the facility operating record. Since the ESV is located upstream from the facility air pollution control devices (APCD), it is understood that combustion gas by-passes these emission control devices during an ESV event. This by-pass will be documented in the facility operating record.

If an ESV opening is attributed to a malfunction and occurs when hazardous waste remains in the combustion chamber, a malfunction recordkeeping form will be completed to document the event.

2.3 Reporting of ESV Openings

If an ESV opening results in a failure to meet the emission standards for the facility, Veolia will submit a written report within five days of the ESV event to Illinois Environmental Protection Agency (IEPA), documenting the results of the investigation and corrective measures taken. In most cases when an ESV event occurs, it is instantaneous. Therefore, it is practical to assume that diminimus emissions occur during these instantaneous events.

3.0 PROCEDURES DURING AN ESV

In the event of an ESV opening that occurs while burning waste, it is important that waste feed is stopped rapidly, and that combustion chamber temperature and negative pressure are maintained to the extent practical. Following the expiration of the hazardous waste retention time, shutting down the combustor (allowing key components to cool) is equally important. These items are addressed below.

3.1 Stopping Waste Feed and Shutting Down the Combustor

An ESV opening is likely to be preceded by a AWFCO or safety interlock that causes a waste feed cutoff prior to the ESV opening. The ESV position is also interlocked with the AWFCO system. These redundant measures ensure that waste feeds will be stopped during an ESV opening. If the AWFCO system fails to cutoff wastes to the incinerator, the waste will be manually cutoff in a quick and safe manner. Waste burning cannot resume until the ESV is closed, corrective actions taken, permission is granted from the incinerator supervisor, and all parameters are within limits.

3.2 Maintaining Combustion Chamber Temperature

Combustion chamber temperatures are maintained using natural gas fired a dedicated burner in both the primary and secondary combustion chambers. If possible, the burning of natural gas will be used to maintain adequate combustion chamber temperatures for the combustion of waste remaining in the incinerator.

3.3 Maintaining Negative Combustion Chamber Pressure

If possible, the ID fan will be operated during an TRV opening to minimize the quantity of combustion gas that by-pass the air pollution control equipment. Operation of the ID fan during an ESV opening will maintain negative combustion pressure to the full extent that is reasonably feasible. It is likely that the opening of the TRV will cause the system to lose negative pressure (*i.e.* the ID fan cannot induce a strong draft). For surge vent opening, the positive pressure excursion will be temporary, and the ID fan (if operable) will be used to restore negative pressure in the primary chamber, as quickly as possible.

3.4 Shutting Down the Combustor

An event which causes an ESV opening may require a cold shut down of the combustor in order to perform corrective actions. After sufficient effort is taken to minimize emissions by maintaining the temperature and pressure, the incinerator supervisor will decide if a shut down is warranted. If the ESV opening corresponds with a malfunction event then the corrective measures taken will be consistent with the procedures prescribed by the SSMP.

3.5 Documentation of Combustion Chamber Pressure and Temperature Maintenance

§ 63.1206(c)(4)(ii)(B) requires that the facility demonstrate that the procedures of this plan are adequate to maintain combustion chamber pressure and temperature while hazardous waste remains in the incinerator, if feasible. The occurrence of an emergency safety vent opening at the Veolia facility is possible only in a select set of circumstances, which are described in Section 1.2 of this plan. If natural gas cannot be burned, it is not feasible to maintain the combustion chamber temperature during an ESV event. Likewise, it is likely that the opening of the TRV will result in the loss of negative pressure. The duration of a surge vent opening will typically be brief and only momentarily prevent maintaining the combustion chamber pressure. The procedures presented in this plan will be followed to minimize the effects of such occurrences.

OPERATION AND MAINTENANCE PLAN

Prepared for:

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Sauget, Illinois

Prepared by:

Franklin Engineering Group, Inc.
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October 2008

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LIST OF TABLES

1.0 INTRODUCTION

Veolia ES Technical Solutions, LLC (Veolia) owns and operates three hazardous waste incinerators at its facility located in Sauget, Illinois. The incinerators are subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Hazardous Waste Combustors (HWC), 40 CFR, Part 63, Subpart EEE (§ 63.1200 to § 63.1221). The NESHAP for HWC specifies emissions standards which reflect emissions performance of Maximum Achievable Control Technologies (MACT), and is commonly referred to as the HWC MACT.

The Interim HWC MACT Standard requires that Veolia operate and maintain the incinerators in a manner consistent with safety and good air pollution control practices for minimizing emissions based on parameter limits achieved during the comprehensive performance test. To meet this objective, Veolia has developed this operation and maintenance (O&M) plan. Veolia will utilize this O&M plan for periods of normal operation of the incinerators. During periods of startup, shutdown, and malfunction, Veolia will utilize the *Startup, Shutdown, and Malfunction Plan* (SSMP). During periods of startup, shutdown, and malfunction, conformance with the SSMP satisfies the duty to minimize emissions. Both the O&M plan and SSMP are maintained at the facility.

The purpose of this O&M plan is to:

- Describe procedures for operating the incinerator during normal operations.
- Describe procedures for inspection and maintenance of the incinerator.
- Describe procedures for corrective measures.
- Establish guidelines designed to ensure that emissions of pollutants, automatic waste feed cutoffs (AWFCOs), and malfunctions are minimized.
- Satisfy the requirements of § 63.1206(c)(7) and § 63.6(e), as shown in Table 1-1 of this plan.

Due to the similarity of the three incinerator systems, general references to an incinerator in this document will imply all three incinerator systems. Information that is only applicable to one or two of the three units will be clearly identified.

1.1 Regulatory Requirements

One of the objectives for this document is to establish a program that will ensure compliance with relevant sections of the Interim HWC MACT standard. Table 1-1 provides the regulatory requirements and location within this document where each requirement is addressed. This table is included to facilitate the expeditious assessment of this plan's coverage of the relevant regulatory requirements.

1.2 Recordkeeping

Veolia will maintain files to comply with the recordkeeping requirements of the Interim MACT Standards. These requirements are summarized in 40 CFR 63.1211(b). The files relevant to this plan that are maintained in the operating record include:

- This O&M Plan;
- Records of all required preventive and necessary maintenance performed on the air pollution control and monitoring equipment; and
- Records of all adjustments and maintenance performed on the continuous monitoring system (CMS).

Table 1-1
Operation and Maintenance Plan Regulatory Checklist

Regulatory Citation	Description	Location Addressed
63.6(e)(1)(i)	Implement safety and good air pollution control practices for minimizing emissions	1.0, 2.0
63.6(e)(1)(ii)	Comply with SSMP and minimize emissions during SSM	1.0
63.6(e)(1)(iii)	O&M requirements established pursuant to section 112 of the CAA	2.0
63.6(e)(3)	Startup, shutdown, and malfunction plan	1.0, SSMP [1]
63.10(b)(1)	Maintaining files	1.2
63.10(b)(2)(iii)	Records of all required maintenance of APC and monitoring equipment	1.2
63.10(b)(2)(xi)	Records of all adjustments and maintenance performed on CMS	1.2
63.1206(c)(7)(i)(A)	Prepare and operate under O&M plan	1.0
63.1206(c)(7)(i)(A)	Procedures for operating combustion system components that could affect emissions	2.0 Table 2-1
63.1206(c)(7)(i)(A)	Procedures for inspecting combustion system components that could affect emissions	4.0
63.1206(c)(7)(i)(A)	Procedures for maintenance combustion system components that could affect emissions	4.0
63.1206(c)(7)(i)(A)	Corrective measures for combustion system components that could affect emissions	2.0, 3.1, SSMP [1]
63.1206(c)(7)(i)(B)	Good air pollution control practices for minimizing emissions	1.0, 2.0
63.1206(c)(7)(i)(C)	O&M plan ensures compliance with O&M requirements of 63.6(e)	1.0
63.1206(c)(7)(i)(C)	O&M plan minimizes emissions of pollutants	1.0, 2.0
63.1206(c)(7)(i)(C)	O&M plan minimizes AWFCOs	1.0, 2.0
63.1206(c)(7)(i)(C)	O&M plan minimizes malfunctions	1.0, 4.0 Table 4-1
63.1206(c)(7)(i)(D)	O&M plan is recorded in operating record	1.2

[1] The Startup, Shutdown, and Malfunction Plan (SSMP) is a stand-alone document, incorporated by reference.

Table 1-1 (continued)
Operation and Maintenance Plan Regulatory Checklist

Regulatory Citation	Description	Location Addressed
63.1206(c)(7)(ii)	If system equipped with a baghouse, bag leak detection system required	3.0
63.1206(c)(7)(ii)(A)(1)	Detect and record PM emissions at adequate sensitivity	3.0
63.1206(c)(7)(ii)(A)(2)	Output relative particulate matter loadings	3.0
63.1206(c)(7)(ii)(A)(3)	Audible alarm if loading detected over limit	3.0
63.1206(c)(7)(ii)(A)(4)	Comply with US EPA guidance or manufacturer's information for installation and operation	3.0
63.1206(c)(7)(ii)(A)(5)	Initial adjustments of the system: baseline, averaging period, alarm set point and delay time	3.0
63.1206(c)(7)(ii)(A)(6)	O&M plan specifies allowable adjustments	3.0, 3.1
63.1206(c)(7)(ii)(A)(6)	Limits to sensitivity adjustments	3.0
63.1206(c)(7)(ii)(A)(7)	Installation location requirements	3.0
63.1206(c)(7)(ii)(B)	Procedures for responding to bag leak detection system alarm	3.1
63.1206(c)(7)(ii)(B)(1)	Initiation of procedures to determine alarm within 30 minutes	3.1
63.1206(c)(7)(ii)(B)(2)	Necessary corrective measure(s) to alleviate cause of alarm	3.1

2.0 NORMAL OPERATIONS OF THE INCINERATORS

Table 2-1 presents a list of titles for Veolia's Standard Divisional Practices (SDPs). These SPDs provide procedures for operating the incinerator in a manner consistent with safety and good air pollution control practices. Utilizing these SDPs, process knowledge, and discretion, operators will maintain the incinerator operating parameters within permissible limits, if possible. Operating the incinerator in this manner will minimize the occurrence of AWFCOs and minimize the emissions of hazardous air pollutants.

All applicable operating requirements for the incinerator, including operating parameter limits (OPLs), are specified in Veolia's *Documentation of Compliance* (DOC) or *Notification of Compliance*, whichever is currently applicable. Normal operations of the incinerator will be in compliance with these requirements.

Veolia has developed Piping and Instrumentation Diagrams (P&IDs), Process Flow Diagram (PFDs), and technical descriptions for each incinerator. These resources in conjunction with MS PowerPoint® presentations are integral parts of operating training. With this training, operators gain the understanding of alarms, interlocks, as well as the automated responses associated with each interlock. Knowledge of alarms and interlocks and access to process variable indication, prepares the operator to perform the appropriate corrective measures should conditions deviate from normal operations. The corrective measures taken will be the operator's efforts to ensure safety and to maintain operating parameters within limits, if possible. If deviations from normal operations are caused by a malfunction, corrective measures will be consistent with the SSMP and the *Program of Corrective Actions for Malfunctions,* Attachment 4.0 of Veolia's SSMP.

Table 2-1
List of Standard Divisional Practices

SDP NUMBER	TITLE
1011	TWI Remedial Action Work Order Program
2200	Specialty Feeder Operation for No. 2/3 Incinerators
2201	Startup, Operation and Shutdown of No. 2/3 Incinerators
2202	Operation of Compressed Gas Cylinder Feeding System
2203	Operation of Solids Feed Conveyor Systems for No. 2/3 Incinerators
2204	Ash Conveyor Operation for No. 2/3 Incinerators
2205	Operation of Liquid Feed Injectors for No. 2/3 Incinerators
2206	No. 2/3 Incinerators Legs Cleanout
2207	No. 2 Incinerator Upper Chamber Feed System
2208	No. 2/3 Incinerators Shutdown Permits, Tagouts and Lockouts
2209	Operation of Baghouse Filters for No. 2/3 Incinerators
2210	Operation of Compressed Air System for No. 2/3 Incinerators
2211	Lime Slurry System Operation for No. 2 and 3 Incinerators
2212	Spray Dryer Absorber Operation for No. 2/3 Incinerators
2213	Operation of Dry Scrubber Solids Conveyor Systems for No. 2/3 Incinerators
2214	Flushing the Lime Slurry System for No. 2/3 Incinerators
2215	Operation of Oxygen Gas Cylinder Processing System
2217	Operation of Specialty Feeder Fume Hood System for No. 3 Incinerator

Table 2-1 (continued)
List of Standard Divisional Practices

SDP NUMBER	TITLE
2219	Lime Storage Loading
2221	24-Hour Staging of Burnable Containers on No. 2/3 Incinerators Dock
2222	Ash Management for No. 2/3 Incinerators
2224	No. 2/3 Incinerators Direct Inject System
2401	No. 4 Incinerator Shutdown Permits, Tagouts and Lockouts
2402	Main Feed Conveyor System Operation for No. 4 Incinerator
2403	Clamshell Feed System Operation
2404	Tempering Chamber Operation
2405	Flushing the Lime Slurry System for No. 4 Incinerator
2406	Operation of Liquid Feed Injectors for No. 4 Incinerator
2407	Cleaning the Process Water System for No. 4 Incinerator
2408	Operation of Carbon Injection System for No. 4 Incinerator
2416	Lime Slurry System Operation for No. 4 Incinerator
2417	Startup, Operation and Shutdown of No. 4 Incinerator
2418	Spray Dryer Absorber Operation for No. 4 Incinerator
2419	Operation of Direct Inject System for No. 4 Incinerator
2421	Air Cannon Operation for No. 4 Incinerator
2422	Auxiliary Feed Conveyor System Operation for No. 4 Incinerator

3.0 BAG LEAK DETECTION SYSTEM

Veolia utilizes a triboelectric bag leak detector to comply with the bag leak detection requirements of 63.1206(c). The installation and on-going operation of the leak detection system is consistent with the US EPA *Fabric Filter Bag Leak Detection Guidance* (EPA-454/R-98-015). The bag leak detection system monitors the relative particulate matter loading of the gas in the duct downstream of the induced draft fan. The bag leak detection system has been certified from manufacturer that the system is capable of detecting and recording particulate emissions at concentrations of 1.0 milligram per actual cubic meter.

The sensitivity of the bag leak detector is set by selecting the relative output range. A response time (i.e., averaging period) is utilized to smooth fluctuations in the triboelectic signal. The bag leak detection system utilizes two alarm set points (high and high-high), which are set as a percentage of the full scale reading. The alarm set points are based on a multiple of the baseline reading considering cleaning cycle peaks, if apparent. The high-high alarm is interlocked with the AWFCO system. The delay times for the alarms are based on the normal bag cleaning pulse cycles. The bag leak detection system settings are presented in Table 3-1.

Following initial adjustments (including adjustments made during a 30-day trial period) to the bag leak detection system, there will be no adjustments to the sensitivity (range), averaging period, alarm set point, or alarm delay time except for the adjustments made consistent with recommendations in Section 5.3 of the US EPA *Fabric Filter Bag Leak Detection Guidance* (EPA-454/R-98-015). Periodic adjustments to the bag leak detection system may be warranted to prevent/minimize the occurrence of false alarms. If over a 365 day period, the sensitivity is increased by more than 100 percent or decreased by more than 50 percent, a complete baghouse inspection and necessary repairs will be performed to assure good operating condition.

Table 3-1
Baghouse Leak Detection System Specifications

Parameter	Unit 2	Unit 3	Unit 4
Range	0-1,000	0-1,000	0-1,000
Averaging Period	10 seconds	10 seconds	10 seconds
High Alarm	20%	20%	10%
High Alarm Delay Time	3 minutes	3 minutes	6 minutes
High-High Alarm (AWFCO)	30%	30%	15%
High-High Alarm Delay Time	6 minutes	6 minutes	12 minutes

3.1 Corrective Measures for Bag Leak Detection Alarms

Veolia has implemented the necessary proactive measures to prevent/minimize the occurrence of bag leak detection alarms. These proactive measures include inspections and preventive maintenance of the baghouse and the bag leak detection system. Additionally, the installation and operation of the bag leak detection system is consistent with EPA guidance. Despite these efforts, a false bag leak detection alarm or a bag leak/failure may occur and are considered potential malfunctions. Accordingly, this section is a component of the SSMP and is referenced by paragraph 9.1.1 of the *Program of Correction Actions for Malfunctions*, Attachment 4.0 of Veolia's SSMP.

The purpose of this section is to prescribe the procedures for responding to bag leak detection alarms. The procedures specified in this section will be initiated within 30 minutes of the time the alarm first sounds. The time and cause of each alarm will be recorded on a malfunction recordkeeping form. A blank malfunction recordkeeping form is Attachment 3.0 of Veolia's SSMP.

3.1.1 In case of an alarm for high relative particulate matter loading:

- 3.1.1.1 Review process data for variations in pressure drop across the baghouse, the baghouse cleaning cycle, baghouse inlet temperature, or gas flowrate that corresponds with the occurrence of the bag leak detection alarms. If review of this process data or other factors (e.g., high humidity, reconditioning) indicates a high probability that the excessive triboelectric signal is a false indication of a bag leak/failure, then record findings and proceed with normal operations
- 3.1.1.2 If relative particulate matter loading remains above the high alarm set point, take actions to reduce the relative particulate matter loading (e.g., controlled shutdown of high ash waste feeds).
- 3.1.1.3 If after 30 minutes of the occurrence of the high alarm, the relative particulate matter loading remains above the high alarm set point, follow the corrective measures of 3.1.2.

3.1.2 In case of reoccurring false bag leak detection alarms:

- 3.1.2.1 Clean the bag leak detection system probe, and/or adjust the sensitivity (range), averaging period, alarm set points, and/or alarm delay time, as needed.

3.1.2.2 If corrective measures of 3.1.2.1 were previously unsuccessful, follow corrective measures of 3.1.3.

3.1.3 In case of an alarm for high-high relative particulate matter loading:

3.1.3.1 Initiate a controlled shutdown of waste feeds.

3.1.3.2 Inspect baghouse for leaks, torn or broken filter elements, or other internal equipment failures; and repair as needed.

3.1.3.3 Following inspection/repair of baghouse, clean the bag leak detection system probe, and/or adjust the sensitivity (range), averaging period, alarm set points, and/or alarm delay time, as needed.

As stated in the US EPA *Fabric Filter Bag Leak Detection Guidance* (EPA-454/R-98-015), "...conditioning the [bag leak detection] system to the process environment is critical to reliable and repeatable operation." Therefore, allowance for reconditioning the system to the process environment should be made after cleaning the probe or after making adjustments to the system.

4.0 INSPECTION AND MAINTENANCE

As stated in Sections V.a.F. and V.b.F. of Veolia's Part B RCRA Permit, each incinerator system undergoes a "thorough visual inspection for leaks, spills, fugitive emissions, and sign of tampering at least daily and in accordance with the inspection schedule, contained in Appendix 6 of the approved permit application". Veolia utilizes these inspections and additional preventive maintenance activities as proactive measures for minimizing the potential for malfunctions. To facilitate proper maintenance, a cold shutdown will occur at least once per year for each incinerator system. Table 4-1 presents a general summary of the inspection and maintenance activities that are performed to prevent malfunctions.

Routine inspection and maintenance activities are scheduled, communicated, and recorded through the use of field checklists. Parts of the incinerator systems that are subject to wear (e.g., bearings, O-rings, air/oil filters) are replaced based on the schedules indicated on these checklists. These field checklists will also be used to document repairs or replacements of incinerator components that may be revealed during inspections. If as-needed repairs cannot be performed immediately (within 24-hours), SDP 1011—*TWI Remedial Action Work Order Program*—ensures that these non-routine maintenance activities are given the appropriate priority and are tracked through completion. Brief procedures/instructions for inspection and maintenance activities are provided on field checklists. Addition details and procedures for inspection and maintenance activities are communicated through the following:

- SDPs for specific process maintenance procedures (see Table 2-1);
- Inspection and maintenance procedures from equipment manufacturers;
- Training activities for maintenance personnel; and
- Shutdown and maintenance meetings.

Selected inspection and maintenance activities may be performed by qualified contractors or associates affiliated with an equipment manufacturer/vendor. Veolia will include documentation of these activities in the operating record.

Inspection and maintenance requirements are also addressed in other plans required by the Interim HWC MACT Standard. Inspection and testing of the AWFCO system are described in the *Automatic Waste Feed Cutoff Plan*. Inspection, calibration, and preventive maintenance for the continuous emissions monitoring system (CEMS) are discussed the *Continuous Emissions Monitoring System Quality Assurance Plan*. Discussion on calibration and maintenance for the continuous monitoring system (CMS) is presented in the *Continuous Monitoring System Quality Assurance Program*.

Table 4-1
Inspection and Maintenance to Prevent Malfunctions

Potential Cause for Malfunction	Inspections	Maintenance
Mechanical/electrical failure of rotating equipment.	• Daily inspections for leaks, corrosion, and vibration • Instrumentation and alarms for current, lubrication, and/or vibration on selected rotating equipment	• Cleaning • Tightening fasteners and supports • Lubrication • Alignment • Scheduled replacement of critical parts • As needed repairs/replacements
Plugging/Mechanical failure of lines/nozzles	• Daily inspection for leaks, and corrosion • Internal equipment inspections during shutdowns	• Cleaning • Tightening supports • As needed repairs/replacements
Mechanical/electrical failure of instrumentation	• Process variable indication • Comparison between redundant instruments • Calibration checks	• Scheduled replacement of instruments • As needed repairs/replacements
Mechanical/electrical failure of actuated valves/dampers	• Daily inspection for leaks, and corrosion • Visual inspection of instrument air and electrical connections • Confirmation of fail-safe positions during shutdowns • Confirmation of functionality through process variable control/indication • AWFCO Testing	• Cleaning • Lubrication • As needed repairs/replacements

Table 4-1 (continued)
Inspection and Maintenance to Prevent Malfunctions

Potential Cause for Malfunction	Inspections	Maintenance
Physical/electrical failure of control system	• Process variable control/indication • Visual inspection of connections • AWFCO Testing	• Cleaning • As needed repairs/replacements
Mechanical/electrical failure of utility supplies	• Inspections of the utility supply source	• As needed repairs/replacements
Electrical/actuation failure of safety interlocks	• Confirmation of valve fail-safe positions during shutdowns • Verification of alarms and interlocks during AWFCO Testing	• As needed repairs/replacements
Physical/mechanical internal equipment failure	• Daily exterior inspections for leaks, corrosion, and vibration • Interior inspections during shutdowns	• Internal cleaning • Tightening fasteners and supports • As needed repairs/replacements

5.0 ALTERNATIVE MODE OF OPERATION

Veolia routinely performs certain inspection and maintenance activities that cannot take place while operating the incinerator under the requirements of normal operation and must be performed more frequently than cold shutdowns. These activities are typically identified during the proactive inspections (see Table 4-1) or when noticeable changes in normal operating parameters are identified. These inspection and maintenance activities cannot take place while operating the incinerator under the requirements of normal operations; however, a cold shutdown is not required to complete these activities. For this reason, Veolia has defined an alternative mode of operation during which these activities can be performed. This mode of operation is referred to as the "warm stand-by mode".

The warm stand-by mode of operation is being implemented per the requirements in § 63.1206(b)(1)(ii). This mode of operation will only be implemented when hazardous waste is not in the combustion chamber (i.e., the hazardous waste residence time has transpired). The remainder of the section describes the warm stand-by mode and the applicable requirements for this alternative mode of operation.

5.1 Warm Stand-by Mode of Operation

The warm stand-by mode of operation is utilized to perform inspections and maintenance activities that do not warrant a complete cold shutdown. During this mode of operation the combustion chamber temperatures are maintained utilizing natural gas. This is desirable from a long term operating standpoint to minimize extreme temperature cycles for the refractory which can lead to excessive wear and premature failure. Further, this provides for shorter duration maintenance periods and a quicker return to normal operation (i.e., since the combustion chambers are not cooled to ambient conditions, then the "normal" operating temperatures can be attained in a shorter duration).

Operation in the warm stand-by mode can only begin when hazardous waste is not in the combustion chamber (i.e., the hazardous waste residence time has transpired). Only natural gas will be fed to the main burners to maintain stand-by temperatures of the combustion unit. Veolia will document in the operating record all times that the unit is in warm stand-by maintenance operating mode as well as descriptions of any inspection and maintenance activities performed during the warm stand-by mode.

During the warm stand-by mode of operation all combustion gases are ducted through the air pollution control system (APCS). The APCS, continuous monitoring systems (CMS), and continuous emission monitoring systems (CEMS) are operated per normal operating procedures, unless temporarily out-of-service for inspection and maintenance activities. The automatic waste feed cutoff (AWFCO) system is not operational since there is no hazardous waste feed to the unit.

Per § 63.1209(q)(2)(iii), Veolia will utilize a seamless transition between operating in warm stand-by mode and normal operations. This allows for calculating rolling averages using data from the previous operating mode. Prior to transitioning to normal operating mode, Veolia will ensure that valid data is available for calculating rolling averages and that all parameters are within limits. Normal operations will resume with the initiation of hazardous waste to the incinerator.

5.2 Applicable Requirements

When operating in the warm stand-by mode the following Interim HWC MACT standards do not apply:

- Emission standards in § 63.1203
- Monitoring and compliance standards of §§ 63.1206 through 63.1209, except the modes of operation requirements in § 63.1209(q)
- Notification, reporting, and recordkeeping requirements of §§ 63.1210 through 63.1212

Per the requirement of 63.1206(b)(ii), this section supplies documentation in the operating record that Veolia is complying with all "otherwise applicable requirements" during warm stand-by mode of operation. Requirements constitute "otherwise applicable requirements" to the extent that they do not arise from Subpart EEE and they are otherwise applicable to any of the emission units when it is operating during warm stand-by mode. Incinerator Unit 2, Unit 3, or Unit 4, when operated under warm stand-by mode, is not subject to any "otherwise applicable requirements".

FEEDSTREAM ANALYSIS PLAN

Veolia ES Technical Services, LLC
Sauget, Illinois

October 2008

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1.0 INTRODUCTION

Pursuant to the regulatory requirements found in 40 CFR 63.1206 (c) of the HWC MACT Standard, Veolia ES Technical Solutions, LLC (Veolia) has developed a Feedstream Analysis Plan (FAP). Its purpose is to provide a system whereby Veolia can sample, analyze, and control the incineration of feedstreams that may contain constituents requiring feedrate limits as specified in the HWC MACT Standard. The FAP also addresses how these activities will be recorded in the facility's operating record.

This FAP is organized such that each of the subsequent sections specifically addresses the six paragraphs under 40 CFR 63.1206 (c) (2) and three paragraphs under 40 CFR 63.1206 (c) (4) in the order in which they are presented in the HWC MACT Standard. In many instances, this FAP will reference the facility's Waste Analysis Plan (WAP). The WAP is an integral part of the RCRA Part B Permit, the Permit Application, and any subsequent revisions or addenda to the Part B Permit or Permit Application.

As required by sections 63.6 (e)(v) and 63.6 (e)(vi) of the HWC MACT Standard, the FAP and other documents containing procedures or information referred to in the FAP will be made available for inspection when requested by the Administrator. The FAP, correspondence with the Administrator concerning the FAP, and any subsequent additions or modifications to the FAP will be kept in the facility's Operating Record. If Veolia is required to submit copies of the FAP or portions of it (or related documents), confidential business information entitled to protection from disclosure will be clearly designated.

2.0 FEEDSTREAM PARAMETERS

There are three feedstream constituents that are specified in the HWC MACT Standard for emission and/or feedrate limitations and that may be present in any given feedstream. These three are:

1) Chlorine
2) Metals (Mercury, Lead, Cadmium, Chromium, Beryllium, and Arsenic)
3) Ash

These three constituents will serve as the feedstream parameters of concern in the FAP as required by 40 CFR 63.1206 (c) (2) (I) of the HWC MACT Standard. Feedstream data applicable to each of these parameters will be obtained for all feedstreams in order to control the incineration of them and remain within the feedrate limits set for them.

2.1 Chlorine

Feedstream data will provide a weight-based percentage of chlorine for each waste feed to the incinerators. These results can be used to both estimate targeted feed rate values and control actual feed rates during incineration.

2.2 Metals

Feedstream data will provide a parts-per-million concentration for each of the listed metals in each of the waste feeds to the incinerators. For analytical results that show less than detection limit concentrations, ½ the detection limit value will be used for incinerator feed computations. These results can be used to both estimate targeted feed rate values and control actual feed rates during incineration.

2.3 Ash

Feedstream data will provide a weight-based percentage of ash for each of the waste feeds to the incinerators. These results can be used to both estimate targeted feed rate values and control actual feed rates during incineration.

3.0 ANALYTICAL RATIONALE

In 40 CFR 63.1206 (c) (2) (ii) of the HWC MACT Standard, a facility is required to identify how it will obtain the necessary analysis to comply with these regulations. There are three sources of analytical information that Veolia can use in evaluating the feedstream parameters as described in Section 2.0 of the FAP. They are:

1) Analysis performed by Veolia
2) Analysis performed by others
3) Manufacturer data or other published information

These sources are also referenced in the facility's WAP and the ways in which they can be applied to feedstreams are extensively addressed. Many of the analytical procedures performed as described in the FAP are also required as part of the waste acceptance and management process at Veolia. The information derived from these procedures can then be used in complying with the feedstream limitations for the parameters identified in the FAP.

The three analytical sources can be applied to generator wastes received at the Veolia facility, including those that undergo subsequent blending prior to incineration, and also to wastes that are generated at the facility.

3.1 Analysis Performed by Veolia

The predominate means applicable to this source of analytical information is the methodology described in Section 5.0 of the FAP. Specific analytical methods performed in the facility's laboratory are applied to applicable feedstreams to produce values for the required parameters.

Typically, the feedstream is a waste profile from a generator that has been accepted according to the facility's WAP guidelines. This waste will have had analytical work performed on a sample for an initial acceptance decision and supplemental analysis as

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required for subsequent shipments of the waste. This analytical work will include information on the parameters identified in the FAP and can be used to control the incineration of the feedstreams.

In other instances, the feedstreams are wastes blended together at the facility (e.g., bulk liquids and bulk solids) or wastes generated by the facility (e.g., laboratory wastes, incinerator ash). Feedstreams that are the result of blending or other on-site processing steps prior to incineration can have parameters determined from the same analytical methods described in the previous paragraph or by statistically arriving at an average value based on a body of previously analyzed samples. Wastes generated by the facility will have parameters determined from an average value based on a body of previously analyzed samples.

For many feedstreams, the best source of information for the parameters identified in the FAP will be obtained using the technical expertise of Veolia personnel. Examples of these types of feedstreams are labpacks, controlled substances and empty containers. The facility's WAP lists some of these reference sources in Appendix WAP-F.

3.2 Analysis Performed by Others

In situations where Veolia cannot perform the necessary analysis due to the nature of the feedstream (e.g., gases, some reactive materials) or when previous outside analysis of feedstreams that meets the standards of this FAP is available, Veolia will accept the analysis of others in determining parameter values. This analytical information will be evaluated and used to control the incineration of feedstreams in the same manner as analytical information produced at the facility.

3.3 Manufacturer Data or Other Published Information

Many feedstreams have pre-existing information applicable to them that can be used to determine the values of the parameters as identified in the FAP. This can take the form of manufacturer specifications and data, Material Safety Data Sheets, reference sources or other published information. The facility's WAP lists some of these reference sources in Appendix WAP-F. Examples of these types of feedstreams include commercial products, pharmaceuticals, chemical reagents, and gas cylinders. This information will be evaluated and used to control the incineration of these feedstreams in the same manner as analytical information produced at the facility.

4.0 APPLICATION OF ANALYSIS FOR FEEDRATE COMPLIANCE

Feedstream data will be used to maintain compliance for the feedrate limitations to the incinerators. This analysis will be completed prior to the feeding of any material to the incinerators. The documentation of these feedrate compliance methods is required by 40 CFR 63.1206 (c) (2) (iii) of the HWC MACT Standard and outlined in this section of the FAP.

Analytical results can be used to both estimate targeted feed rate values and control actual feed rates during incineration. Analysis from laboratory testing at the facility, analytical results from others, published information, and technical evaluations by Veolia personnel can all be used in complying with feedrate limitations for the parameters identified in the FAP. In addition, these analytical information sources can be used for wastes from generators, wastes blended at the facility, and wastes generated at the facility.

4.1 Process Planning for Feedstreams

When evaluating analytical results and any additional information applicable to a potential feedstream, a decision must be made whether parameters for that feedstream are acceptable for feeding to the incinerators or if some level of feed preparation is necessary. This step in the feedstream evaluation process is called process planning. It is applied to blending wastes, processing wastes into combustible charges, and determining if wastes can be fed directly to the incinerators as initially received at the facility. This planning is performed based on information from analytical results, incinerator performance capabilities, process operation history, and the technical expertise of the process planning personnel involved.

4.2 Process Control for Feedstreams

In order to ensure that feedrate limits for the parameters in the FAP are not exceeded during operation of the incinerators, automatic systems must be in place to control the incinerator process. These systems continuously track the feedstream parameters as they are introduced into the incinerators and make the necessary feed adjustments or cut-offs for compliance. Section 7.0 of the FAP addresses these systems and the rationale behind their operation in greater detail.

4.3 Documentation and Recordkeeping for Process Planning and Control

Documentation of process planning and control is demonstrated by the extensive body of information collected in the facility's data management system, and, if needed, distributed in hard copy form to appropriate personnel. This includes laboratory analysis used for feed preparation, bulk waste storage data, processing directions, and related information. Actual incinerator operations data is recorded in printed summaries, recorded onto digital data storage systems, and is also selectively available on-line. This information will be retained in the operating record for the life of the facility.

5.0 SAMPLING AND ANALYTICAL METHODS

The requirements in 40 CFR 63.1206 (c) (2) (iv) and (v) of the HWC MACT Standard state that a facility must identify the sampling and test methods used for analyzing the feedstreams. The sampling methodology and much of the analytical methodology that is described in Sections 2.0 and 3.0 of the facility's Waste Analysis Plan is applicable to the FAP. Additional sampling and testing information is included in the following paragraphs of this section.

5.1 Sampling Methodologies

Sampling is performed at the Veolia facility to identify waste shipments and also by the generator at their location when making an initial determination on the acceptability of the waste at Veolia. In some instances, an actual sample will not be required because technical personnel at Veolia will have determined that sufficient documentation already exists that identifies information regarding the parameters described in Section 2.0 of the FAP (see also Section 4.0, Paragraph 4.1.12 (2) of the WAP). In order to obtain a representative sample of the waste, specific sampling procedures that are dependent on both the nature of the waste sampled and the type of processes in which the waste will be stored or transferred must be performed. Section 2.0 of the facility's WAP and pertinent appendices in the WAP list these procedures and the ASTM method number (or other EPA approved method) on which they are based. This section in the WAP also addresses the sampling equipment used, the types of intended containment or processes that can impact the sampling, and guidelines on how to ensure that a valid and representative sample is obtained.

5.2 Documentation and Recordkeeping Associated with Sampling

All samples taken at the facility or sent to the facility for analysis are assigned a unique sample identification number. These identification numbers are recorded in a chain-of-custody log and used for tracking the sample through the facility's data collection system. Each sample also has a label affixed to it identifying its contents, the date the sample was taken, and the person who took the sample.

5.3 Analytical Methodologies

CHLORINE

The analytical procedures and EPA approved methods related to determining the amount of chlorine in a feedstream are found in Appendix WAP-A to the facility's WAP.

METALS

Feedstreams that require analysis for the metals specified in the HWC MACT Standard will either contain these metals in a non-water-soluble form or a water-soluble form. Samples of feedstreams in a non-water-soluble form will require additional preparation steps prior to analysis. The analytical procedures and EPA approved methods related to determining the amount of listed metals in a feedstream are listed below.

<u>Digestion Procedure for Non-Water-Soluble Samples</u>

Method 3051A – Microwave Assisted Acid Digestion of Sediments, Sludges, Soils, and Oils

Procedure for Determining Concentration of Mercury in Sample

Method 7473 – Mercury in Solids and Solutions by Thermal Decomposition, Amalgamation, and Atomic Absorption Spectrophotometry

Procedure for Determining Concentration of Arsenic, Beryllium, Cadmium, Chromium and Lead in Sample

Method 6010C – Inductively Coupled Plasma-Atomic Emission Spectrometry

ASH

The analytical procedures and EPA approved methods related to determining the amount of ash in a feedstream are found in Appendix WAP-A to the facility's WAP.

5.4 Documentation and Recordkeeping Associated with Sample Analysis

Documentation of analytical work is accomplished by recording it in laboratory logbooks, entering it into the facility's data management system, and, if needed, distributed in hard copy form to appropriate personnel. All technical files for waste profiles will also include initial laboratory analysis and any applicable subsequent analysis. This information will be retained in the operating record for the life of the facility.

6.0 FREQUENCY OF ANALYSIS

In 40 CFR 63.1206 (c) (2) (vi) of the HWC MACT Standard, a facility is required to identify the frequency with which an initial analysis is repeated or reviewed to ensure that it is current. This FAP will require that the analytical information for the feedstreams be re-evaluated on a frequency consistent with that described for all wastes as described in Section 4.1.3 of the facility's WAP. The three events that may trigger a need to update or evaluate the analysis of a given feedstream are:

1) Generator notifies Veolia that a feedstream has changed
2) Subsequent analysis for a feedstream used by Veolia is inconsistent with the original analysis
3) Five years have passed since the last assessment of the feedstream

In order for a feedstream to be considered acceptable again for incineration after one of these events has occurred, the evaluation process as described in this FAP must be completed.

7.0 COMPLIANCE WITH FEED RATES

Veolia employs process control systems for the incinerators that monitor, adjust and record feedstreams and the key parameters identified in the FAP that are associated with them. These systems meet the requirements of 40 CFR 63.1206 (c) (4), paragraphs (i), (ii) and (iii). The systems and the rationale that supports these systems are described in the following paragraph.

7.1 Feed Rate Compliance Systems and Methodology

After the metals and ash concentrations for feedstreams are determined, they will be entered into the facility's data management systems. These feedstreams are identified in the system under a site tracking number, bulk pit number, or tank number. Once this information is in the waste tracking system, the incinerator control systems are able to import and store the data for use as the waste streams are processed at the incinerators. All waste introduced into the incinerators has an associated site identification designation (receiver number, etc.) so it can be referenced to the appropriate data from the waste tracking system. As weights are recorded at 15 second intervals for each specific waste stream entering the incinerator, computations are being performed to calculate the quantities of metals (as low volatile metals, semi volatile metals, and mercury) and ash that are being incinerated. These quantities are displayed, totalized, and recorded in a manner that will show compliance with the established operating parameter limits for the metals categories and ash. One hour and 12 hour rolling totals are displayed for the incinerator operators for monitoring of these feeds.

RCRA Test Results							
Unit 2							MACT
January, 1993	Units	Run 1	Run 2	Run 3	Run 4	Average	Standard
DRE							
Carbon Tetrachloride	%	>99.99984	>99.99970	>99.99989	>99.99983	>99.99982	>99.99
Monochlorobenzene	%	>99.99970	>99.99990	>99.99991	>99.99991	>99.99986	>99.99
1,2,3-Trichlorobenzene	%	99.999998	99.9999977	99.9999972	99.9999968	99.9999974	>99.99
HCl/Cl2	ppm	9.6	9.3	10	12.6	10.4	32
Particulate	gr/dscf	0.0026	0.0024	0.0025	0.0028	0.0026	0.013
Unit 3							
November, 1996							
DRE							
Carbon Tetrachloride	%	99.99991	99.99997	99.99997		99.99995	>99.99
Tetrachloroethane	%	99.9999	99.99997	99.99998		99.99996	>99.99
1,2,3-Trichlorobenzene	%	>99.99965	>99.99984	>99.99983		>99.99984	>99.99
HCl/Cl2	ppm	17.5	18.3	10		15.3	32
Particulate	gr/dscf	0.0017	0.0004	0.0009		0.001	0.013
Unit 4							
December, 1995							
DRE							
Monochlorobenzene	%	99.99988	99.99986	99.99983		99.999857	>99.99
Hexachloroethane	%	>99.99981	>99.99984	>99.99984		>99.999830	>99.99
Naphthalene	%	>99.99989	>99.99990	>99.99990		>99.999897	>99.99
HCl/Cl2	ppm	<27.7	<20.1	<20.8		<22.9	32
Particulate	gr/dscf	0.0057	0.0087	0.0078		0.0074	0.013

Table 3
CEMS Relative Accuracy - CO, ppm @ 7% O_2
Unit 2 Incinerator Exhaust
Veolia ES Technical Solutions
Sauget, Illinois

Run No.	Date	Time	Reference Method	Facility CEMS	Difference
1	6/17/2008	0943-1004	0.03	2.10	-2.07
2	6/17/2008	1023-1044	0.00	2.03	-2.03
3	6/17/2008	1101-1122	0.00	1.34	-1.34
4	6/17/2008	1139-1200	1.15	1.01	0.14
5	6/17/2008	1240-1301	0.00	1.50	-1.50
6	6/17/2008	1332-1353	0.00	0.94	-0.94
7	6/17/2008	1409-1430	0.00	2.27	-2.27
8	6/17/2008	1446-1507	0.41	1.33	-0.92
9	6/17/2008	1521-1542	0.00	1.76	-1.76
		Average:	0.18	1.59	1.41
				Relative Accuracy:	**2.0 ppm @ 7% O2**

* Not used in averages and RA calculation

Emission Standard (ES):	100
Standard Deviation (Sd):	0.753
Confidence Coefficient (CC):	0.579
Relative Accuracy (% of ES):	2.0
Relative Accuracy (% of RM):	1126.6
Bias Adjustment Factor (BAF):	NA

Table 4

CEMS Relative Accuracy - O_2, percent dry (Cosa)

Unit 2 Incinerator Exhaust

Veolia ES Technical Solutions

Sauget, Illinois

Run No.	Date	Time	Reference Method	Facility CEMS	Difference
1	6/17/2008	0943-1004	12.9	12.5	0.42
2	6/17/2008	1023-1044	13.2	12.8	0.33
3	6/17/2008	1101-1122	13.2	12.7	0.47
4	6/17/2008	1139-1200	13.4	12.8	0.59
5	6/17/2008	1240-1301	13.1	12.5	0.64
6	6/17/2008	1332-1353	12.6	11.9	0.63
7	6/17/2008	1409-1430	13.4	12.7	0.76
8	6/17/2008	1446-1507	13.4	12.5	0.87
9	6/17/2008	1521-1542	13.5	12.8	0.72
		Average:	13.18	12.58	0.60
				Relative Accuracy:	5.6 % of RM

* Not used in averages and RA calculation

Emission Standard (ES):	NA
Standard Deviation (Sd):	0.172
Confidence Coefficient (CC):	0.132
Relative Accuracy (% of ES):	NA
Relative Accuracy (% of RM):	5.6
Bias Adjustment Factor (BAF):	1.048

Table 5

CEMS Relative Accuracy - O_2, percent wet (Cosa)
Unit 2 Incinerator Exhaust
Veolia ES Technical Solutions
Sauget, Illinois

Run No.	Date	Time	Reference Method	Facility CEMS	Difference
1	6/17/2008	0943-1004	7.83	7.31	0.52
2	6/17/2008	1023-1044	8.22	7.50	0.72
3	6/17/2008	1101-1122	8.28	7.53	0.75
4	6/17/2008	1139-1200	9.07	7.63	1.44
5	6/17/2008	1240-1301	7.89	7.23	0.66
6	6/17/2008	1332-1353	7.16	6.66	0.50
7	6/17/2008	1409-1430	8.10	7.94	0.16
8	6/17/2008	1446-1507	8.15	7.85	0.30
9	6/17/2008	1521-1542	8.18	7.92	0.26
		Average:	8.10	7.51	0.59
				Relative Accuracy:	**10.9 % of RM**

* Not used in averages and RA calculation

Emission Standard (ES):	NA
Standard Deviation (Sd):	0.381
Confidence Coefficient (CC):	0.293
Relative Accuracy (% of ES):	NA
Relative Accuracy (% of RM):	10.9
Bias Adjustment Factor (BAF):	1.079

Table 6
CEMS Relative Accuracy - Moisture, percent
Unit 2 Incinerator Exhaust
Veolia ES Technical Solutions
Sauget, Illinois

Run No.	Date	Time	Reference Method	Facility CEMS	Difference
1	6/17/2008	0943-1004	39.3	41.5	-2.2
2	6/17/2008	1023-1044	37.5	41.5	-4.0
3	6/17/2008	1101-1122	37.0	40.7	-3.6
4	6/17/2008	1139-1200	32.2	40.4	-8.2
5	6/17/2008	1240-1301	39.8	42.0	-2.2
6	6/17/2008	1332-1353	43.0	44.2	-1.2
7	6/17/2008	1409-1430	39.6	37.3	2.4
8	6/17/2008	1446-1507	39.2	37.5	1.8
9	6/17/2008	1521-1542	39.5	38.1	1.4
		Average:	38.6	40.3	1.8
				Relative Accuracy:	**11.2 % of RM**

* Not used in averages and RA calculation

Emission Standard (ES):	NA
Standard Deviation (Sd):	3.344
Confidence Coefficient (CC):	2.570
Relative Accuracy (% of ES):	NA
Relative Accuracy (% of RM):	11.2
Bias Adjustment Factor (BAF):	NA

Table 7

CEMS Relative Accuracy - CO, ppm @ 7% O_2

Unit 3 Incinerator Exhaust

Veolia ES Technical Solutions

Sauget, Illinois

Run No.	Date	Time	Reference Method	Facility CEMS	Difference
1	6/17/2008	1716-1737	0.00	0.00	0.00
2	6/17/2008	1801-1822	0.00	0.00	0.00
3	6/17/2008	1836-1857	0.00	0.00	0.00
4	6/17/2008	1913-1934	0.00	0.00	0.00
5	6/17/2008	1948-2009	0.28	0.00	0.28
6	6/17/2008	2023-2044	0.29	0.00	0.29
7	6/18/2008	0752-0813	0.00	0.00	0.00
8	6/18/2008	0825-0846	0.11	0.00	0.11
9	6/18/2008	0857-0918	0.03	0.00	0.03
		Average:	0.08	0.00	0.08
				Relative Accuracy:	**0.2 ppm @ 7% O2**

* Not used in averages and RA calculation

Emission Standard (ES):	100
Standard Deviation (Sd):	0.122
Confidence Coefficient (CC):	0.094
Relative Accuracy (% of ES):	0.2
Relative Accuracy (% of RM):	219.5
Bias Adjustment Factor (BAF):	NA

Table 8

CEMS Relative Accuracy - O_2, percent dry (Cosa)

Unit 3 Incinerator Exhaust

Veolia ES Technical Solutions

Sauget, Illinois

Run No.	Date	Time	Reference Method	Facility CEMS	Difference
1	6/17/2008	1716-1737	12.79	11.8	0.98
2	6/17/2008	1801-1822	12.39	11.4	1.02
3	6/17/2008	1836-1857	12.23	11.9	0.30
4	6/17/2008	1913-1934	13.00	12.8	0.20
5	6/17/2008	1948-2009	12.90	12.7	0.20
6	6/17/2008	2023-2044	12.79	12.6	0.19
7	6/18/2008	0752-0813	10.72	10.5	0.26
8	6/18/2008	0825-0846	11.64	11.6	0.09
9	6/18/2008	0857-0918	12.05	12.0	0.01
		Average:	12.28	11.92	0.36
				Relative Accuracy:	5.3 % of RM

* Not used in averages and RA calculation

Emission Standard (ES):	NA
Standard Deviation (Sd):	0.372
Confidence Coefficient (CC):	0.286
Relative Accuracy (% of ES):	NA
Relative Accuracy (% of RM):	5.3
Bias Adjustment Factor (BAF):	1.030

Table 9

CEMS Relative Accuracy - O_2, percent wet (Cosa)

Unit 3 Incinerator Exhaust

Veolia ES Technical Solutions

Sauget, Illinois

Run No.	Date	Time	Reference Method	Facility CEMS	Difference
1	6/17/2008	1716-1737	6.73	7.46	-0.73
2	6/17/2008	1801-1822	6.63	6.79	-0.16
3	6/17/2008	1836-1857	6.49	6.63	-0.14
4	6/17/2008	1913-1934	7.87	7.41	0.46
5	6/17/2008	1948-2009	7.12	7.36	-0.24
6	6/17/2008	2023-2044	7.12	7.25	-0.13
7	6/18/2008	0752-0813	4.97	5.41	-0.44
8	6/18/2008	0825-0846	5.54	6.00	-0.46
9	6/18/2008	0857-0918	5.91	6.33	-0.42
		Average:	6.49	6.74	0.25
				Relative Accuracy:	**7.8 % of RM**

* Not used in averages and RA calculation

Emission Standard (ES):	NA
Standard Deviation (Sd):	0.331
Confidence Coefficient (CC):	0.255
Relative Accuracy (% of ES):	NA
Relative Accuracy (% of RM):	7.8
Bias Adjustment Factor (BAF):	NA

Table 10

CEMS Relative Accuracy - Moisture, percent
Unit 3 Incinerator Exhaust
Veolia ES Technical Solutions
Sauget, Illinois

Run No.	Date	Time	Reference Method	Facility CEMS	Difference
1	6/17/2008	1716-1737	47.4	36.8	10.5
2	6/17/2008	1801-1822	46.5	40.2	6.3
3	6/17/2008	1836-1857	46.9	44.4	2.5
4	6/17/2008	1913-1934	39.5	42.1	-2.6
5	6/17/2008	1948-2009	44.8	42.1	2.7
6	6/17/2008	2023-2044	44.3	42.5	1.9
7	6/18/2008	0752-0813	53.6	48.4	5.3
8	6/18/2008	0825-0846	52.4	48.3	4.1
9	6/18/2008	0857-0918	51.0	47.4	3.5
		Average:	47.4	43.6	3.8
				Relative Accuracy:	**13.8 % of RM**

* Not used in averages and RA calculation

Emission Standard (ES):	NA
Standard Deviation (Sd):	3.566
Confidence Coefficient (CC):	2.740
Relative Accuracy (% of ES):	NA
Relative Accuracy (% of RM):	13.8
Bias Adjustment Factor (BAF):	1.087

Table 11

CEMS Relative Accuracy - CO, ppm @ 7% O_2

Unit 4 Rotary Kiln Exhaust

Veolia ES Technical Solutions

Sauget, Illinois

Run No.	Date	Time	Reference Method	Facility CEMS	Difference
1	6/18/2008	1257-1318	2.59	1.74	0.85
2	6/18/2008	1334-1355	2.78	1.10	1.68
3	6/18/2008	1413-1434	2.70	1.13	1.57
4	6/18/2008	1456-1517	2.69	1.44	1.25
5	6/18/2008	1544-1605	2.77	2.26	0.51
6	6/18/2008	1623-1644	2.29	1.79	0.50
7	6/18/2008	1700-1721	2.25	1.73	0.52
8	6/18/2008	1732-1753	2.05	1.91	0.14
9	6/18/2008	1806-1827	1.75	2.35	-0.60
		Average:	2.43	1.72	0.71
				Relative Accuracy:	**1.3 ppm @ 7% O2**

* Not used in averages and RA calculation

Emission Standard (ES):	100
Standard Deviation (Sd):	0.719
Confidence Coefficient (CC):	0.553
Relative Accuracy (% of ES):	1.3
Relative Accuracy (% of RM):	52.1
Bias Adjustment Factor (BAF):	1.416

Table 13

CEMS Relative Accuracy - O_2, percent dry (Cosa)

Unit 4 Rotary Kiln Exhaust

Veolia ES Technical Solutions

Sauget, Illinois

Run No.	Date	Time	Reference Method	Facility CEMS	Difference
1	6/18/2008	1257-1318	13.86	13.9	-0.05
2	6/18/2008	1334-1355	13.45	13.5	-0.08
3	6/18/2008	1413-1434	13.28	13.3	-0.05
4	6/18/2008	1456-1517	13.46	13.6	-0.11
5	6/18/2008	1544-1605	13.72	13.9	-0.14
6	6/18/2008	1623-1644	13.45	13.5	-0.01
7	6/18/2008	1700-1721	13.49	13.4	0.06
8	6/18/2008	1732-1753	13.59	13.6	0.03
9	6/18/2008	1806-1827	13.61	13.6	0.06
		Average:	13.55	13.58	0.03
				Relative Accuracy:	**0.6 % of RM**

* Not used in averages and RA calculation

Emission Standard (ES):	NA
Standard Deviation (Sd):	0.072
Confidence Coefficient (CC):	0.056
Relative Accuracy (% of ES):	NA
Relative Accuracy (% of RM):	0.6
Bias Adjustment Factor (BAF):	NA

Table 13
CEMS Relative Accuracy - O_2, percent wet (Cosa)
Unit 4 Rotary Kiln Exhaust
Veolia ES Technical Solutions
Sauget, Illinois

Run No.	Date	Time	Reference Method	Facility CEMS	Difference
1	6/18/2008	1257-1318	8.56	8.36	0.20
2	6/18/2008	1334-1355	7.36	8.03	-0.67
3	6/18/2008	1413-1434	7.55	7.85	-0.30
4	6/18/2008	1456-1517	7.59	8.02	-0.43
5	6/18/2008	1544-1605	7.68	8.24	-0.56
6	6/18/2008	1623-1644	7.22	7.99	-0.77
7	6/18/2008	1700-1721	7.42	7.91	-0.49
8	6/18/2008	1732-1753	7.70	7.99	-0.29
9	6/18/2008	1806-1827	7.79	8.07	-0.28
		Average:	7.65	8.05	0.40
				Relative Accuracy:	**8.1 % of RM**

* Not used in averages and RA calculation

Emission Standard (ES):	NA
Standard Deviation (Sd):	0.283
Confidence Coefficient (CC):	0.218
Relative Accuracy (% of ES):	NA
Relative Accuracy (% of RM):	8.1
Bias Adjustment Factor (BAF):	NA

Table 14

CEMS Relative Accuracy - Moisture, percent
Unit 4 Rotary Kiln Exhaust
Veolia ES Technical Solutions
Sauget, Illinois

Run No.	Date	Time	Reference Method	Facility CEMS	Difference
1	6/18/2008	1257-1318	38.2	40.0	-1.7
2	6/18/2008	1334-1355	45.3	40.7	4.6
3	6/18/2008	1413-1434	43.1	41.1	2.0
4	6/18/2008	1456-1517	43.6	40.9	2.7
5	6/18/2008	1544-1605	44.0	40.5	3.5
6	6/18/2008	1623-1644	46.3	40.6	5.7
7	6/18/2008	1700-1721	45.0	41.1	3.9
8	6/18/2008	1732-1753	43.3	41.1	2.2
9	6/18/2008	1806-1827	42.8	40.5	2.3
		Average:	43.5	40.7	2.8
				Relative Accuracy:	**10.1 % of RM**

* Not used in averages and RA calculation

Emission Standard (ES):	NA
Standard Deviation (Sd):	2.087
Confidence Coefficient (CC):	1.604
Relative Accuracy (% of ES):	NA
Relative Accuracy (% of RM):	10.1
Bias Adjustment Factor (BAF):	1.069

Mississippi Lime Company
General Offices
Alton, Illinois 62002
P.O. Box 247
Phone: 618-465-7741

MISSISSIPPI ROTARY PLANT

Hydrated Lime

Code MR200

Meets AWWA and Water Chemicals Codex Specifications

Chemical Analysis

$Ca(OH)_2$	96.0%	to	97.2%
CaO Equivalent	72.6	to	73.6
CaO Total	73.6	to	74.3
$CaCO_3$	0.65	to	1.75
$CaSO_4$	0.05	to	0.10
S Equivalent	0.012	to	0.024
SiO_2	0.38	to	0.65
Al_2O_3	0.20	to	0.30
Fe_2O_3	0.07	to	0.10
MgO	0.40	to	0.55
Free H_2O	0.30	to	0.85
P_2O_5	0.008	to	0.012
MnO	0.0015	to	0.0025

Typical Physical Analysis

Minus 100 mesh	100.0%
Minus 200 mesh	98.5
Minus 325 mesh	92.0

Density - Pounds per ft^3 - 20 to 32
(Depending upon degree of compaction)

ISO 9002

REGISTERED

FM 36335

NORIT Americas Inc.

Most Choices + Precise Fit = Best Performance.

DATASHEET

Product No. FGL
Revised 11-97

DARCO® FGL

POWDERED ACTIVATED CARBON

DARCO FGL is a lignite coal based activated carbon manufactured specifically for the removal of heavy metals and other contaminants typically found in incinerator flue gas emission streams. Its open pore structure and fine particle size permits the rapid adsorption of gaseous mercury, dioxins (PCDD) and furans (PCDF), which is critical for good absorptive performance in flue gas streams where contact times are short.

DARCO FGL is a free flowing powdered carbon with minimal caking tendencies which makes it ideal for automatic dosing systems with dry or wet injection directly into the flue gas stream. It is manufactured with a very high ignition temperature to permit safe operation at the elevated temperatures inherent in incinerator flue gas streams.

<u>Specifications</u>	
Molasses decolorizing efficiency, %	40 min.
Moisture, % as packed	8 max.
Mesh size:	
Less than 325 mesh (45 µm), %	90 min.

<u>General Characteristics*</u>	
Surface area, m^2/g	550
Heat capacity	0.22
Total sulfur, %	0.6
Ignition temperature, °C	450

* For general information only, not to be used as purchase specifications.

<u>Packaging</u>
Standard package is 40 lb. bags, 50 bags per pallet for a net pallet weight of 2000 lbs. Alternate packages include bulk trailers, and woven polypropylene bulk bags, 900 lbs. net, with a glued plastic liner.

<u>Safety</u>
<u>CAUTION</u>: Wet activated carbon depletes oxygen from air and, therefore, dangerously low levels of oxygen may be encountered. Whenever workers enter a vessel containing activated carbon, the vessel's oxygen content should be determined and work procedures for potentially low oxygen areas should be followed. Appropriate protective equipment should be worn. Avoid inhalation of excessive carbon dust. No problems are known to be associated in handling this material. However, dust may contain greater than 1.0% silica (quartz). Longterm inhalation of high dust concentrations can lead to respiratory impairment. Use forced ventilation or a dust mask when necessary for protection against airborne dust exposure (see Code of Federal Regulations - Title 29, Subpart Z, par. 1910.1000, Table Z-3).

bulk density 0.53 g/mL
33 lb/ft^3

5775 Peachtree Dunwoody Road NE • Building C • Suite 250 • Atlanta, GA 30342
Telephone (404) 256-6150 • 1-800-641-9245 • FAX (404) 256-6199 www.norit.com

NORIT

Solids Residence Time Calculations

Unit 4:

Based on the equation $\Theta=[(0.19L)/(NDS)]$, where:

Θ is the residence time in minutes,
L is the kiln length in feet,
N is the rotational speed in revolutions per minute,
S is the kiln slope in feet per feet, and
D is the internal diameter in feet,

and inserting the known values for L (35), N (2), S (0.0174), and D (6.5) result in a residence time for the rotary kiln of 30 minutes.

Units 2/3:

Since these incinerators are fixed hearth units, residence time is based on the travel length of the ash ram which functions to clear the primary combustion chamber of solid waste residue. A travel length of 110 inches has been determined to be the minimum ash ram stroke length required to remove solid waste residue from the primary combustion chamber of the fixed hearth units.

MACT TRAINING OUTLINE
VEOLIA ENVIRONMENTAL SERVICES – SAUGET, IL

1. Environmental and Safety Requirements for Incineration and Material Handling

    1.1 Environmental Regulations for Incineration and Material Handling

    1.2 Safety Regulations for Incineration and Material Handling

2. Science and Technology of Incineration and Air Pollution Control

    2.1 Combustion

    2.2 Heat Exchange

    2.3 Refractory

    2.4 Acid Gas Neutralization

    2.5 Carbon Absorption

    2.6 Ash and Particulate Removal

3. Incineration and Air Pollution Control Equipment at Facility

    3.1 Combustion Systems of No. 2 and 3 Incinerators

    3.2 Combustion System of No. 4 Incinerator

    3.3 Air Pollution Control Equipment of No. 2 and 3 Incinerators

    3.4 Air Pollution Control Equipment of No. 4 Incinerator

    3.5 Instrumentation and Stack Gas Monitoring

    3.6 Process Control and Data Recording Systems

MACT TRAINING OUTLINE (continued)

4. Incinerator Feed Systems

   4.1 Natural Gas Burners

   4.2 Bulk Liquids

   4.3 Bulk Solids

   4.4 Containerized Solids

   4.5 Specialty Liquids

   4.6 Gases and Liquefied Gases

5. Operation of Facility Incinerators

   5.1 Startup and Shutdown – No. 2 and 3 Incinerators

   5.2 Startup and Shutdown – No. 4 Incinerator

   5.3 Normal Operations

   5.4 Processing Scenarios

   5.5 Maintenance and Inspection

   5.6 Troubleshooting and Response to Process Upsets

Jdm/MACTtrainoutline04

Onyx Environmental Services, L.L.C.
#7 Mobile Avenue
Sauget, IL 62201
(618) 271-2804
(618) 271-2128 FAX

ONYX

TRAINING DOCUMENTATION FORM

TITLE: MACT OPERATOR TRAINING, PARTS 1 and 2

SUBJECT DESCRIPTION: Review of regulations, incineration science, primary combustion and APC equipment at TWI

TRAINING CODE: ______________ *(if uncertain, leave blank)*

TRAINING PROVIDED BY: JEFF MUELLER
(Trainer's name printed) (Trainer's signature)

DATE TRAINED: 3-5-03, 3-6-03

LENGTH OF TNG: 16 hours

INPUT TO TRS 6/18/03

ATTENDEES:

PRINT NAME:	SIGNATURE
1. David L Klein	
2. Larry Kult	
3. Terry Ball	Terry Ball
4. Michael Dale	
5.	
6.	
7.	
8.	
9.	
10.	

Entered in TRS: ____________

Onyx Environmental Services, L.L.C.
#7 Mobile Avenue
Sauget, IL 62201
(618) 271-2804
(618) 271-2128 FAX

ONYX

TRAINING DOCUMENTATION FORM

TITLE: MACT TRAINING FOR INCINERATOR OPERATORS, PARTS 1 AND 2

SUBJECT DESCRIPTION: Review of EHS regulations, science of incineration, and primary combustion and APC components of No. 2, No. 3 and No. 4 Incinerators

TRAINING CODE: ____________ *(if uncertain, leave blank)*

TRAINING PROVIDED BY: JEFF MUELLER (Trainer's name printed) ____________ (Trainer's signature)

DATE TRAINED: MARCH 12-13, 2003

LENGTH OF TNG: 16 hours

INPUT TO TRS 6/18/03

ATTENDEES:

PRINT NAME:	SIGNATURE
1. Clinton Dace	
2. Chuck Edwards	
3.	Vragme, Timothy A
4. Larry AGNE	
5.	
6.	
7.	
8.	
9.	
10.	

Entered in TRS: ____________

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#7 Mobile Avenue
Sauget, IL 62201
(618) 271-2804
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ONYX

TRAINING DOCUMENTATION FORM

TITLE: MACT Incinerator Operator Training - Parts 1 and 2

SUBJECT DESCRIPTION: Review of regulations applicable to incineration, science of incineration and primary components for combustion and air pollution control systems

TRAINING CODE: ______________ *(if uncertain, leave blank)*

TRAINING PROVIDED BY: Jeff Mueller
(Trainer's name printed)

(Trainer's signature)

DATE TRAINED: March 19-20, 2003

INPUT TO TRS 6/18/03

LENGTH OF TNG: 16 hours

ATTENDEES:

PRINT NAME:	SIGNATURE
1. Rodney J. Maloy	R Maloy
2. George Demetrulias	
3. Dave Klarich	Klarich
4. Bruce Chandler	Bruce Chandler
5. Ed. Lasich	Edward R Lasich
6.	
7.	
8.	
9.	
10.	

Entered in TRS: ______________

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#7 Mobile Avenue
Sauget, IL 62201
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ONYX

TRAINING DOCUMENTATION FORM

TITLE: MACT Incinerator Operator Training - Parts 1 and 2

SUBJECT DESCRIPTION: Review of EHS regulations, science of incineration and main components of combustion and APC systems on No. 2, No. 3 and No. 4 Incinerators

TRAINING CODE: ________________ *(if uncertain, leave blank)*

TRAINING PROVIDED BY: Jeff Mueller (Trainer's name printed) [signature] (Trainer's signature)

DATE TRAINED: March 26-27, 2003

LENGTH OF TNG: 16 hours

INPUT TO TRS 6/18/03

ATTENDEES:

PRINT NAME:	SIGNATURE
1. Tad Schreckenberg	Tad Schreckenberg
2. Blake Peterson	Blake Peterson
3. Angelo Demetaulias	Angelo D. Demetulis
4. ROBERTA VOELKER	Robert A Voelker
5.	
6.	
7.	
8.	
9.	
10.	

Entered in TRS: ____________

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#7 Mobile Avenue
Sauget, IL 62201
(618) 271-2804
(618) 271-2128 FAX

ONYX

TRAINING DOCUMENTATION FORM

TITLE: MACT Incinerator Operator Training - Parts 1 and 2

SUBJECT DESCRIPTION: Review of regulations, science of incineration, and main components of combustion and APC systems at No. 2, No. 3 and No. 4 Incinerators

TRAINING CODE: ____________ *(if uncertain, leave blank)*

TRAINING PROVIDED BY: Jeff Mueller
(Trainer's name printed) (Trainer's signature)

DATE TRAINED: April 2-3, 2003

INPUT TO TRS 6/18/03

LENGTH OF TNG: 16 hours

ATTENDEES:

PRINT NAME:	SIGNATURE
1. Roy Underwood	
2. Dean Portell	
3. David Matesian	
4. Louis A Garza	
5. Stan Lawrence	
6.	
7.	
8.	
9.	
10.	

Entered in TRS: ____________

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#7 Mobile Avenue
Sauget, IL 62201
(618) 271-2804
(618) 271-2128 FAX

ONYX

TRAINING DOCUMENTATION FORM

TITLE: MACT OPERATOR TRAINING - PARTS 1 AND 2

SUBJECT DESCRIPTION: Review of regulations, science of incineration, and major components of combustion and air pollution control systems for No. 2, No. 3 and No. 4 Incinerators.

TRAINING CODE: ____________ *(If uncertain, leave blank)*

TRAINING PROVIDED BY: Jeff Mueller
(Trainer's name printed) (Trainer's signature)

DATE TRAINED: APRIL 9-10, 2003

LENGTH OF TNG: 16 hours

INPUT TO TRS 6/18/03

ATTENDEES:

PRINT NAME:	SIGNATURE
1. NORMAN J. BRIDER	N J Brider
2. TIM BARRETT	Tim Barrett
3. MATT RIGNEY	Matt Rigney
4. CHRISTIE NAREZ	Christie Narez
5. Gregg RAINBOLT	Gregg Rainbolt
6. GEORGE SMITH	George Smith
7.	
8.	
9.	
10.	

Entered in TRS: __________

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Sauget, IL 62201
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TRAINING DOCUMENTATION FORM

TITLE: MACT OPERATOR TRAINING - PARTS 3 and 4

SUBJECT DESCRIPTION: Review of incinerator feeding systems and startup, shutdown, normal operations and troubleshooting of incinerators

TRAINING CODE: ______________ *(If uncertain, leave blank)*

TRAINING PROVIDED BY: Jeff Mueller (Trainer's name printed) (Trainer's signature)

DATE TRAINED: 4/16/03 to 4/17/03

LENGTH OF TNG: 16 hours

ATTENDEES:

TRS 6/18/03

PRINT NAME:	SIGNATURE
1. Michael Dale	
2. David L Klein	
3. Larry Kult	
4. Terry Ball	Terry Ball
5. George Smith	George Smith
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9.	
10.	

Entered in TRS: __________

Onyx Environmental Services, L.L.C.
#7 Mobile Avenue
Sauget, IL 62201
(618) 271-2804
(618) 271-2128 FAX

ONYX

TRAINING DOCUMENTATION FORM

TITLE: MACT INCINERATOR OPERATOR TRAINING - PARTS 3 & 4

SUBJECT DESCRIPTION: Review of Incinerator burners and Feeding systems, startup, shutdown and normal operations of the incinerators, inspection, maintenance and troubleshooting

TRAINING CODE: ____________ *(if uncertain, leave blank)*

TRAINING PROVIDED BY: Jeff Mueller (Trainer's name printed) [signature] (Trainer's signature)

DATE TRAINED: APRIL 23-24, 2003

LENGTH OF TNG: 16 hours

INPUT TO TRS 6/18/03

ATTENDEES:

PRINT NAME:	SIGNATURE
1. Tim Frame	[signature]
2. Chuck Edwards	[signature]
3. Larry Alne	Larry Alne
4. Clinton Dace	[signature]
5.	
6.	
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10.	

Entered in TRS: ____________

Onyx Environmental Services, L.L.C.
#7 Mobile Avenue
Sauget, IL 62201
(618) 271-2804
(618) 271-2128 FAX

ONYX

TRAINING DOCUMENTATION FORM

TITLE: MACT INCINERATOR OPERATOR TRAINING - PARTS 3 AND 4

SUBJECT DESCRIPTION: Review of burners and waste feed systems; incinerator operations including startup, normal operations, shutdown; inspection, maintenance and troubleshooting process upsets.

TRAINING CODE: ____________ *(if uncertain, leave blank)*

TRAINING PROVIDED BY: Jeff Mueller (Trainer's name printed) (Trainer's signature)

DATE TRAINED: MAY 7-8, 2003

LENGTH OF TNG: 16 hours

INPUT TO TRS 6/18/03

ATTENDEES:

PRINT NAME:	SIGNATURE
1. Tad Schreckenberg	Tad Schreckenberg
2. Blake Peterson	Blake Peterson
3. Robert Voelker	Robert A Voelker
4.	
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Entered in TRS: ____________

Onyx Environmental Services, L.L.C.
#7 Mobile Avenue
Sauget, IL 62201
(618) 271-2804
(618) 271-2128 FAX

ONYX

TRAINING DOCUMENTATION FORM

TITLE: MACT Incinerator Operator Training - Parts 3 and 4

SUBJECT DESCRIPTION: Review of burners and waste feed systems; incinerator operations including, startup, normal operations, shutdown; inspection, maintenance and trouble-shooting process upsets.

TRAINING CODE: ______________ *(if uncertain, leave blank)*

TRAINING PROVIDED BY: Jeff Mueller (Trainer's name printed) [signature] (Trainer's signature)

DATE TRAINED: May 21-22, 2003

LENGTH OF TNG: 16 hours

INPUT TO TRS 6/18/03

ATTENDEES:

PRINT NAME:	SIGNATURE
1. Tim Barrett	[signature]
2. Christie Narez	[signature]
3. Matt Rigney	[signature]
4. Angelo G. Demetoulis Sr	[signature]
5. Norman Jack Briden	[signature]
6. [illegible]	[signature]
7.	
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Entered in TRS: ____________

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Onyx Environmental Services, L.L.C.
#7 Mobile Avenue
Saugét, IL 62201
(618) 271-2804
(618) 271-2128 FAX

ONYX

TRAINING DOCUMENTATION FORM

TITLE: MACT OPERATOR TRAINING - PARTS 3 AND 4

SUBJECT DESCRIPTION: Review of burners and waste feed systems, incinerator operations including startup, shutdown and environmental parameters, and troubleshooting process upsets.

TRAINING CODE: ____________ *(if uncertain, leave blank)*

TRAINING PROVIDED BY: Jeff Mueller
(Trainer's name printed)
(Trainer's signature)

DATE TRAINED: 4/30/03- 5/1/03

LENGTH OF TNG: 16 hours

TRS 6/18/03

ATTENDEES:

PRINT NAME:	SIGNATURE
1. Bruce Chanaur	
2. Ed LASICH	Edward B Lasich
3. George Demetrius	
4. Koi) Malawy	R
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Entered in TRS: ____________

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#7 Mobile Avenue
Sauget, IL 62201
(618) 271-2804
(618) 271-2128 FAX

ONYX

TRAINING DOCUMENTATION FORM

TRNG

TITLE: MACT NATIONAL EMISSION STANDARDS FOR

SUBJECT DESCRIPTION: HAZARDOUS AIR POLLUTANTS FROM HAZARDOUS WASTE COMBUSTORS – TRAINING

TRAINING CODE: ____________ *(If uncertain, leave blank)*

TRAINING PROVIDED BY: JEFF MUELLER (Trainer's name printed) ____________ (Trainer's signature)

DATE TRAINED: 1/23/03

LENGTH OF TNG: 1 HR.

ATTENDEES:

PRINT NAME:	SIGNATURE:
1. David Pratt	[signature]
2. MARTHA LEAVELL	Martha Leavell
3. Violet Leslie	Violet Leslie
4. MARION SAYRE	Marion Sayre
5. Angie Franke	[signature]
6. Douglas Bushey	[signature]
7. David Klein	[signature]
8. Bruce Chandler	[signature]
9. STANLEY W. LAWEALLER	[signature]
10. Vincent Wisely	Vincent Wisely
Scotie Hughes	[signature]
Tony Click	Tony Click
KEVIN BROCK	[signature]

Entered in TRS: ____________

PETE KAYFIELD
STEVE LUTHY
LORENZO GREEN
George Dematrollone
FRED ARNOLD
Greg Stein
DEAN PORTELL
JIM BEAR
Brian Bunfill
PAT STAEBBL
Sean Welch
Michael Viles
David Dillard
Keith Barton
Bryant Blacker
MIKE VARGAS
Eddie Robinson
Sandra Hurley
Cynthia Williams
SARAH L Littlejohn
TED WILBOURN
Denise Volner
Gregg Rainboet
Jordyn Kucharski
Eddie Graves
Jim Sorbie
Steve Watson
Becky Dever
Jim Smallwood
Michael Zotz
David Sandmann

Onyx Environmental Services, L.L.C.
#7 Mobile Avenue
Sauget, IL 62201
(618) 271-2804
(618) 271-2128 FAX

ONYX

TRAINING DOCUMENTATION FORM

TITLE: MACT

SUBJECT DESCRIPTION: Haz Waste Combustor MACT Trng

TRAINING CODE: ____________ *(if uncertain, leave blank)*

TRAINING PROVIDED BY: JEFF MUELLER
(Trainer's name printed)

(Trainer's signature)

DATE TRAINED: 2/3/03

LENGTH OF TNG: 1½ hr

ATTENDEES:

PRINT NAME:	SIGNATURE
1. TIM BARRETT	Tim Barrett
2. Tony SAckett	Anthony Sackett
3. JACK FICKER	Jack Ficker
4. Randy Portell	Randy Portell
5. Don JOHNSTON	Don Johnston
6. JOHN SKREMANCE	[illegible]
7. [illegible]	[illegible]
8. Steve Becker	[illegible]
9. Rob Brown	Rob Brown
10. Rod E. DENT	Rod E Dent
STEVE L. [illegible]	[illegible]

Entered in TRS: ____________

Onyx Environmental Services, L.L.C.
#7 Mobile Avenue
Sauget, IL 62201
(618) 271-2804
(618) 271-2128 FAX

ONYX

TRAINING DOCUMENTATION FORM

TITLE: MACT

SUBJECT DESCRIPTION: HAZ WASTE COMBUSTOR MACT TRNG

TRAINING CODE: ______ *(if uncertain, leave blank)*

TRAINING PROVIDED BY: JEFF MUELLER (Trainer's name printed) [signature] (Trainer's signature)

DATE TRAINED: 2/3/03

LENGTH OF TNG: 1½ hr

ATTENDEES:

PRINT NAME:	SIGNATURE
1. Michael L. McClenahan	[signature]
2. Todd Hale	[signature]
3. MITCHELL A. BLUM	[signature]
4. David Cripps	[signature]
5. Kenny Soto	[signature]
6. Scott Ernst	[signature]
7. Bill Adams	[signature]
8. John Spenoe	[signature]
9. [illegible]	[signature]
10. Tad Schreckenberg	[signature]

Entered in TRS: ______

Onyx Environmental Services, L.L.C.
#7 Mobile Avenue
Sauget, IL 62201
(618) 271-2804
(618) 271-2128 FAX

ONYX

TRAINING DOCUMENTATION FORM

TITLE: HAZARDOUS WASTE COMBUSTOR MACT TRAINING.

SUBJECT DESCRIPTION: INITIAL TRAINING

TRAINING CODE: ____________ *(if uncertain, leave blank)*

TRAINING PROVIDED BY: JEFF MUELLER (Trainer's name printed) [signature] (Trainer's signature)

DATE TRAINED: 2/8/03

LENGTH OF TNG: 1 ½ hr.

ATTENDEES:

PRINT NAME:	SIGNATURE
1. Gary Burke	Gary Burke
2. Arnold Henry	Arnold Henry
3. Angelo G. Dometelias Sr.	[signature]
4. BoB KAIN	Bob Kain
5. ROB SANDRETTO	[signature]
6. Bruce McGlasson	[signature]
7. Doug HALL	[signature]
8. RICH PRATT	[signature]
9. John Anderson	John Anderson
10. WAYNE DEMETCULIAS	Wayne Demetcul[illegible]

Entered in TRS: ____________

VEOLIA
ENVIRONMENTAL SERVICES
#7 Mobile Ave.
Sauget, IL 62201

TRAINING
DOCUMENTATION FORM

TITLE: 2009 ANNUAL REFRESHER TRAINING

SUBJECT

DESCRIPTION: Statement & Code of Ethics, Alcohol & Substance Abuse, Drug & Alcohol Policy, Sexual Harassment, LINE BREAKING Site Safety Policy & Procedures/Plant Rules, Contingency Plan/Emer. Evac, Lock out/Tag out, Hot Work, Hazard Communication, Confined Space, Bloodborne Pathogens, Carcinogens, PPE Selection, Respirator Training Respirator Fit Test, Temperature Stress, EH & S Update & MACT Overview, Stormwater Mgmt., Fire Hazards & Prevention, Medical Program/IH, Process Safety Mgmt/Risk Mgmt., Hearing Conservation, Bonding & Grounding Forklift Refresher Training, Forklift Driving Test, Contamination Control, Incident/Accident Spill Reporting & Investigation, Mat'l Handling, [redacted]

TRAINING PROVIDED BY: Dennis Warehol (Trainer's Name Printed) — [signature] (Trainer's Signature)

DATE TRAINED: 4/29/08 LENGTH OF TRAINING: 5 HRS OFFICE PERSONNEL
9 HRS OPERATIONS PERSONNEL

ATTENDEES:

PRINT NAME	SOCIAL SECURITY #	SIGNATURE
✓1. Sandy Hurley	[redacted]	Sandy Hurley
Blake Peterson	32862-5698	Blake Peterson
Tim Barrett	—	Tim Barrett
✓4. Tony Click		Tony Click
✓5. Dwayne Hobbs		Dwayne [signature]
✓6. Roy Underwood		[signature]
✓7. Cory Miller		Cory Miller
✓8. Zach Dunpes		[signature]
✓9. M. Livingston		Michael [signature]
✓10. Eddie Graves		Eddie Graves
✓11. Eric J. Maren		Eric J. [signature]
✓12. Bob Lewis		[signature]
✓13. Lloyd Kimbrough		[signature]
✓14. Kenneth Brown		[signature]
✓15. Chad Stein		[signature]
✓16. Josh Kelley		[signature]
✓17. Shorter Jones		[signature]
✓18. Ray Hasty (PPE, Resp. fit)		Ray [signature]
✓19. Brandon Lanton		Brandon [signature]
Cynthia Williams		Cynthia Williams
✓21. John Vogler		[signature] Vogler
✓ Paul Stotzel		Paul Stotzel